```
=> FILE REG
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FILE COVERS 1907 - 14 Jun 2007  VOL 146 ISS 25
FILE LAST UPDATED: 13 Jun 2007  (20070613/ED)

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=> D QUE L35
L5              STR
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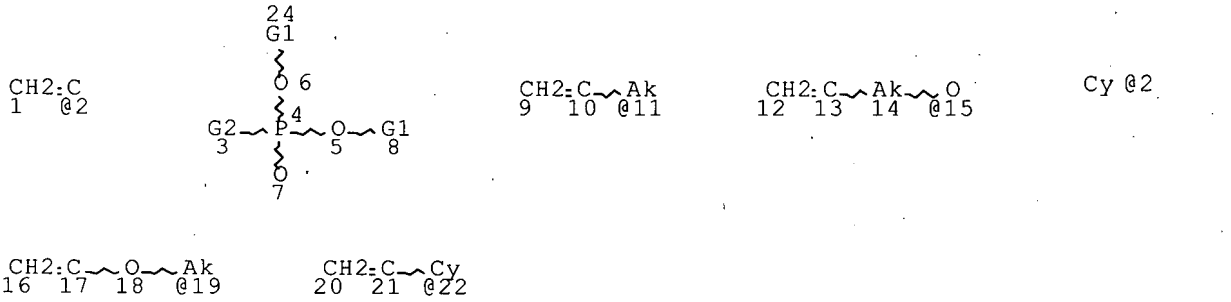

Page 1-A

3

Page 1-B
VAR G1=H/AK/23
VAR G2=2/11/15/19/22
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DEFAULT MLEVEL IS ATOM
GGCAT IS UNS AT 22
GGCAT IS UNS AT 23
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 24

STEREO ATTRIBUTES: NONE

L7	5482	SEA FILE=REGISTRY SSS FUL L5	
L8	1322	SEA FILE=REGISTRY ABB=ON	L7 AND PMS/CI
L9	2076	SEA FILE=REGISTRY ABB=ON	PBI/PCT
L10	130071	SEA FILE=REGISTRY ABB=ON	333.401.37/RID
L12	1434	SEA FILE=REGISTRY ABB=ON	L10 AND PMS/CI
L13	5479	SEA FILE=HCAPLUS ABB=ON	L7
L14	1381	SEA FILE=HCAPLUS ABB=ON	L8
L15	1672	SEA FILE=HCAPLUS ABB=ON	L9
L16	53149	SEA FILE=HCAPLUS ABB=ON	L10
L18	1472	SEA FILE=HCAPLUS ABB=ON	L12
L19	7296	SEA FILE=HCAPLUS ABB=ON	L13 OR L14 OR ?VINYLPHOSPH?
L20	7296	SEA FILE=HCAPLUS ABB=ON	L13 OR L8 OR ?VINYLPHOSPH?
L21	69454	SEA FILE=HCAPLUS ABB=ON	L15 OR L16 OR L18 OR ?BENZIMIDAZOL?
L22	70	SEA FILE=HCAPLUS ABB=ON	L20 AND L21
L23	2725	SEA FILE=HCAPLUS ABB=ON	L19(L)PREP/RL
L24	19	SEA FILE=HCAPLUS ABB=ON	L22 AND L23
L25	32075	SEA FILE=HCAPLUS ABB=ON	?MEMBRANE?(L)PREP/RL
L26	12	SEA FILE=HCAPLUS ABB=ON	L22 AND L25
L27	24	SEA FILE=HCAPLUS ABB=ON	L24 OR L26
L28	27	SEA FILE=HCAPLUS ABB=ON	L23 AND L25
L29	44	SEA FILE=HCAPLUS ABB=ON	L27 OR L28
L32	21	SEA FILE=HCAPLUS ABB=ON	L29 AND (POLYMER? OR PLASTIC?)/SC,SX
L33	18	SEA FILE=HCAPLUS ABB=ON	L29 AND ELECTROCHEMICAL/SC,SX
L34	32	SEA FILE=HCAPLUS ABB=ON	L29 AND MEMBRANE?
L35	32	SEA FILE=HCAPLUS ABB=ON	(L32 OR L33 OR L34)

=> D L35 BIB ABS IND HITSTR 1-32

L35 ANSWER 1 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2007:484169 HCAPLUS Full-text
DN 146:462673
TI Polymers having phosphonic and(or) sulfonic acid groups for fuel cell **membranes** with high life span
IN Uensal, Oemer; Belack, Joerg
PA Pemeas GmbH, Germany
SO Ger. Offen., 38pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI DE 102005052378	A1	20070503	DE 2005-102005052378	20051031
WO 2007051570	A1	20070510	WO 2006-EP10389	20061028

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

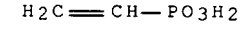
PRAI DE 2005-102005052378 A 20051031
AB Polymers with polymerization degree >300 for the title use are manufactured by radical polymerization of mixts. containing ≥80% ethylenically unsatd. compds., with the monomer composition containing compds. having phosphonic and(or) sulfonic acid groups.
CC 35-4 (Chemistry of Synthetic High **Polymers**)
Section cross-reference(s): **52**
ST vinyl polymer sulfo phospho group manuf fuel cell **membrane**
IT Fuel cell separators
Membrane electrodes
(high-mol.-weight polymers having phosphonic and(or) sulfonic acid groups for fuel cell **membranes** with high life span)
IT Sulfonic acids, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polymers; high-mol.-weight polymers having phosphonic and(or) sulfonic acid groups for fuel cell **membranes** with high life span)
IT Polymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(sulfo-containing; high-mol.-weight polymers having phosphonic and(or) sulfonic acid groups for fuel cell **membranes** with high life span)
IT **27754-99-0P, Vinylphosphonic** acid homopolymer
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(high-mol.-weight polymers having phosphonic and(or) sulfonic acid groups for fuel cell **membranes** with high life span)
IT **27754-99-0P, Vinylphosphonic** acid homopolymer
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)

(high-mol.-weight polymers having phosphonic and(or) sulfonic acid groups for fuel cell **membranes** with high life span)

RN 27754-99-0 HCAPLUS
CN Phosphonic acid, P-ethenyl-, homopolymer (CA INDEX NAME)

CM 1

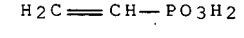
CRN 1746-03-8
CMF C2 H5 O3 P



L35 ANSWER 2 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2007:272185 HCAPLUS Full-text
DN 146:340924
TI Synthesis and characterization of Poly(vinylphosphonic acid) for proton exchange **membranes** in fuel cells
AU Bingoel, Bahar
CS Germany
SO (2007) No pp. Avail.: Metadata on Internet Documents, Order No. 368196 From: Metadata Internet Doc. [Ger. Diss.] 2007, (D0313-4), No pp. given URL: http://www.meind.de/search.py?recid=368196
DT Dissertation
LA English
AB Unavailable
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): **38**
ST synthesis polyvinylphosphonic acid proton exchange **membrane** fuel cell
IT Fuel cells
(proton exchange **membrane**; synthesis and characterization of Poly(vinylphosphonic acid) for proton exchange **membranes** in fuel cells)
IT **27754-99-0P**, Poly(**vinylphosphonic** acid)
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(synthesis and characterization of Poly(**vinylphosphonic** acid) for proton exchange **membranes** in fuel cells)
IT **27754-99-0P**, Poly(**vinylphosphonic** acid)
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(synthesis and characterization of Poly(**vinylphosphonic** acid) for proton exchange **membranes** in fuel cells)
RN 27754-99-0 HCAPLUS
CN Phosphonic acid, P-ethenyl-, homopolymer (CA INDEX NAME)

CM 1

CRN 1746-03-8
CMF C2 H5 O3 P



L35 ANSWER 3 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2007:59255 HCAPLUS Full-text
DN 146:125386
TI Composite electrolyte **membrane** and its manufacture for **membrane** electrode assembly of fuel cell
IN Yamamoto, Taisuke; Hojo, Nobuhiko; Okada, Ikuhiro
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 16pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2007012327	A	20070118	JP 2005-188983	20050628
PRAI JP 2005-188983		20050628		

AB The **membrane** is equipped with a porous substrate having a plurality of through holes impregnated with an electrolyte and protective layers containing acidic polymers on both sides of the **membrane**, where a part of the protective layers is positioned inside of the through holes. The manufacture process comprises impregnating an electrolyte into through holes of the substrate and then forming protective layers containing acidic polymers. The composite electrolyte **membrane** provides high durability, water resistance, and proton conductivity under high temperature and low moisture atmospheric
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST composite electrolyte **membrane** electrode assembly fuel cell; porous substrate electrolyte composite **membrane** acidic polymer protective layer
IT Fuel cell electrolytes
Fuel cells
(acidic polymer coating on composite electrolyte **membrane** for **membrane** electrode assembly of fuel cell)
IT Glass, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(porous, substrate; acidic polymer coating on composite electrolyte **membrane** for **membrane** electrode assembly of fuel cell)
IT 29690-74-2P, **Vinylphosphoric** acid homopolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(electrolyte and coating; acidic polymer coating on composite electrolyte **membrane** for **membrane** electrode assembly of fuel cell)
IT 288-32-4, Imidazole, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(electrolyte containing; acidic polymer coating on composite electrolyte **membrane** for **membrane** electrode assembly of fuel cell)

L35 ANSWER 4 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2007:59252 HCAPLUS Full-text
DN 146:125384
TI Basic polymer/acidic electrolyte composite electrolyte **membrane** and its manufacture for **membrane** electrode assembly of fuel cell
IN Yamamoto, Taisuke; Hojo, Nobuhiko; Okada, Ikuhiro
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 14pp.

CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2007012326	A	20070118	JP 2005-188982	20050628
PRAI	JP 2005-188982		20050628		

AB The **membrane** is equipped with a basic polymer **membrane** impregnated with an acidic electrolyte and protective layers containing acidic polymers on both sides of the **membrane**, where a part of the protective layers is positioned inside of the basic polymer **membrane**. The manufacture process comprises impregnating an acidic electrolyte containing a polymerizing monomer into a basic polymer **membrane** and then polymerizing a part of the monomer to form protective layers containing acidic polymers. The composite electrolyte **membrane** provides high durability, water resistance, and proton conductivity under high temperature and low moisture atmospheric
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST composite polymer electrolyte **membrane** electrode assembly fuel cell; basic polymer acidic electrolyte composite **membrane** protective layer polymn
IT Fuel cell electrolytes
(basic polymer/acidic electrolyte composite **membrane** for **membrane** electrode assembly of fuel cell)
IT **Polybenzimidazoles**
RL: TEM (Technical or engineered material use); USES (Uses)
(basic polymer/acidic electrolyte composite **membrane** for **membrane** electrode assembly of fuel cell)
IT Fuel cells
(polymer electrolyte; basic polymer/acidic electrolyte composite **membrane** for **membrane** electrode assembly of fuel cell)
IT 29690-74-2P, **Vinylphosphoric** acid homopolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(basic polymer/acidic electrolyte composite **membrane** for **membrane** electrode assembly of fuel cell)

L35 ANSWER 5 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2006:1278897 HCAPLUS Full-text
DN 146:47758
TI Proton conducting polymer **membrane**, method for producing same, and fuel cell using same
IN Fujibayashi, Fusaki; Sakaguchi, Yoshimitsu; Takase, Satoshi
PA Samsung Yokohama Research Institute, Japan; Toyo Boseki Kabushiki Kaisha
SO PCT Int. Appl., 42pp.
CODEN: PIXXD2
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2006129694	A1	20061207	WO 2006-JP310858	20060531
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN,				

YU, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

	JP 2006339064	A	20061214	JP 2005-163962	20050603
	JP 2006339065	A	20061214	JP 2005-163982	20050603
PRAI	JP 2005-163962	A	20050603		
	JP 2005-163982	A	20050603		

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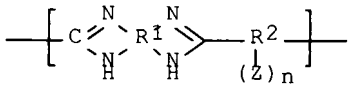


I

AB Disclosed is a novel proton conducting polymer **membrane** which is excellent in workability during assembly of a fuel cell and exhibits excellent proton conductivity and durability even under high temperature, unhumidified conditions. Also disclosed are a method for producing such a proton conducting polymer **membrane**, and a fuel cell using such a proton conducting polymer **membrane**. Specifically disclosed is a proton conducting polymer **membrane** obtained by having a polymer **membrane** containing a **polybenzimidazole** compound having a sulfonic acid group and/or a phosphonic acid group contain a **vinylphosphonic** acid. Also specifically disclosed is a fuel cell using such a proton conducting polymer **membrane**. The **polybenzimidazole** compound may preferably contain a constitutional unit represented by the structural formula I (n = 1-4; R1 = tetravalent aromatic unit capable of forming an imidazole ring; R2 = a divalent aromatic unit; Z = sulfonic acid group, phosphonic acid group).

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): **37**

ST proton conductive **polybenzimidazole** deriv **membrane** fuel cell

IT Fuel cells
(polymer electrolyte; proton-conductive polymer **membranes** for)

IT **Membranes**, nonbiological
(prpton-conductive; **polybenzimidazole** derivs. as)

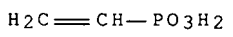
IT **1746-03-8, Vinylphosphonic** acid
RL: MOA (Modifier or additive use); USES (Uses)
(additive for proton-conductive **membrane** for fuel cells)

IT **425636-38-0P 425636-48-2P 916480-27-8P**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(proton-conductive **membrane** for fuel cells)

IT **1746-03-8, Vinylphosphonic** acid
RL: MOA (Modifier or additive use); USES (Uses)
(additive for proton-conductive **membrane** for fuel cells)

RN 1746-03-8 HCAPLUS

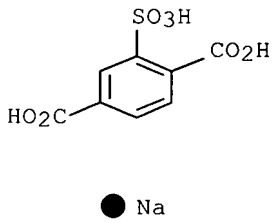
CN Phosphonic acid, P-ethenyl- (CA INDEX NAME)



IT **425636-38-0P 425636-48-2P 916480-27-8P**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(proton-conductive **membrane** for fuel cells)
RN 425636-38-0 HCAPLUS
CN 1,4-Benzenedicarboxylic acid, 2-sulfo-, sodium salt (1:1), polymer with 4,4'-sulfonylbis[1,2-benzenediamine] (CA INDEX NAME)

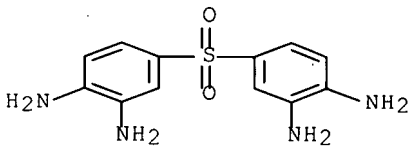
CM 1

CRN 19089-60-2
CMF C8 H6 O7 S . Na



CM 2

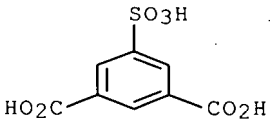
CRN 13224-79-8
CMF C12 H14 N4 O2 S



RN 425636-48-2 HCAPLUS
CN 1,3-Benzenedicarboxylic acid, 5-sulfo-, polymer with 1,4-benzenedicarboxylic acid and 4,4'-sulfonylbis[1,2-benzenediamine] (CA INDEX NAME)

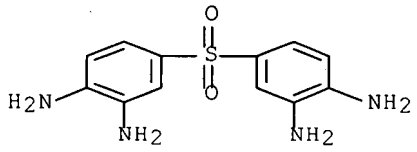
CM 1

CRN 22326-31-4
CMF C8 H6 O7 S



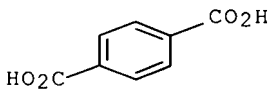
CM 2

CRN 13224-79-8
CMF C12 H14 N4 O2 S



CM 3

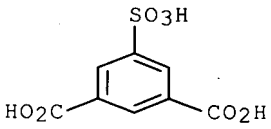
CRN 100-21-0
CMF C8 H6 O4



RN 916480-27-8 HCAPLUS
CN 1,3-Benzenedicarboxylic acid, 5-sulfo-, polymer with sodium 2-sulfo-1,4-benzenedicarboxylate (1:1) and 4,4'-sulfonylbis[1,2-benzenediamine] (CA INDEX NAME)

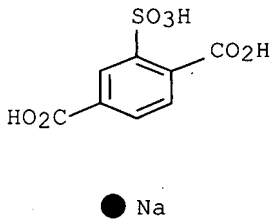
CM 1

CRN 22326-31-4
CMF C8 H6 O7 S



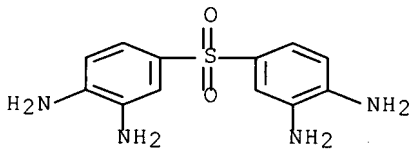
CM 2

CRN 19089-60-2
CMF C8 H6 O7 S . Na



CM 3

CRN 13224-79-8
CMF C12 H14 N4 O2 S



RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 6 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2006:804207 HCAPLUS Full-text
DN 145:357811
TI Comparative ozonization of LDPE and HDPE and grafting of some monomers to elaborate new ion exchange **membranes**
AU Zouahri, A.; Assouag, M.; Robin, J. J.; Boutevin, B.; Elbachiri, A.; Elmidaoui, A.
CS Institut National de la Recherche Agronomique, CRRA de Rabat, Rabat, Morocco
SO Journal of Applied Polymer Science (2006), 101(6), 4423-4429
CODEN: JAPNAB; ISSN: 0021-8995
PB John Wiley & Sons, Inc.
DT Journal
LA English
AB A comparative study of the ozonization of low d. polyethylene (LDPE) and high d. polyethylene (HDPE) was carried out. A grafting study of acrylic acid (AA), N,N-dimethylamino-2-Et methacrylate (MA-DAME) and vinylphosphonic acid (VPA) on LDPE and HDPE was performed in mass and solution The ozonized polyethylene and the grafting polymers were characterized by IR spectroscopy and elementary anal. Ion exchange **membranes** were prepared from grafted copolymers and characterized by the exchange capacity and elec. resistance.
CC 38-3 (**Plastics** Fabrication and Uses)
ST LDPE HDPE ozonization grafting ion exchange **membrane** prepn property
IT Ion exchange **membranes**
Ozonization
(comparative ozonization of LDPE and HDPE and grafting of vinyl monomers in preparation of new ion exchange **membranes**)
IT Polymerization
(graft; comparative ozonization of LDPE and HDPE and grafting of vinyl monomers in preparation of new ion exchange **membranes**)

IT Electric resistance
(of **membranes**; comparative ozonization of LDPE and HDPE and grafting of vinyl monomers in preparation of new ion exchange **membranes**)

IT 9002-88-4DP, Polyethylene, ozonized
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); **PREP (Preparation)**; RACT (Reactant or reagent)
(comparative ozonization of LDPE and HDPE and grafting of vinyl monomers in preparation of new ion exchange **membranes**)

IT 98846-22-1P, Acrylic acid-ethylene graft copolymer 107227-29-2P, N,N-Dimethylaminoethyl methacrylate-ethylene graft copolymer **478375-91-6P**, Ethylene-**vinylphosphonic** acid graft copolymer
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(comparative ozonization of LDPE and HDPE and grafting of vinyl monomers in preparation of new ion exchange **membranes**)

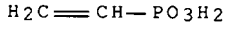
IT **478375-91-6P**, Ethylene-**vinylphosphonic** acid graft copolymer
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(comparative ozonization of LDPE and HDPE and grafting of vinyl monomers in preparation of new ion exchange **membranes**)

RN 478375-91-6 HCAPLUS

CN Phosphonic acid, ethenyl-, polymer with ethene, graft (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8
CMF C2 H5 O3 P



CM 2

CRN 74-85-1
CMF C2 H4

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 7 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2006:563724 HCAPLUS Full-text

DN 145:46972

TI Functionalized with phosphonic acid derivatives polyazols for proton-conductive polyazole **membranes**.

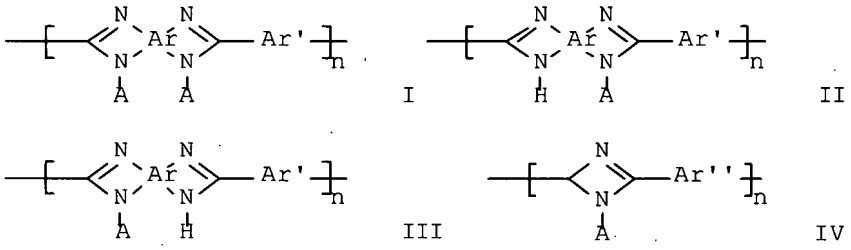
IN Uensal, Oemer; Belack, Joerg; Muellen, Klaus; Klapper, Markus; Sukumar, Prabakaran; Schopov, Ivan; Sinigersky, Vesselin; Bratschkov, Christo; Schenkov, Stoicho; Markova, Dilyana

PA Pemeas G.m.b.H., Germany

SO Ger. Offen., 29 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 102005057644	A1	20060614	DE 2005-102005057644	20051201
PRAI	DE 2004-102004057823	IA	20041201		

GI

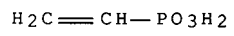


I II III IV

AB A proton conducting polymer **membrane** with operation temperature <0 - 200°, high elec. conductivity and hindered electrolyte out-washing are prepared from with phosphonic acid functionalized polyazols I - IV (Ar', Ar'' and Ar''' = 1-, 2- and 3-valent aromatic or heteroarom. groups, A = **vinylphosphonic** acid residue, such as ethenephosphonic acid, propenephosphonic acid, 2-phosphonomethylacrylic acid, 2-phosphonomethylmethacrylic acid, 2-phosphonomethylacrylamide or 2-phosphonomethylmethacrylamide) having P - N ratio ≥0.5.

CC 38-3 (**Plastics** Fabrication and Uses)
Section cross-reference(s): **52**
ST proton conducting polymer **membrane** functionalized phosphonic acid deriv polyazol
IT Electrolytic cells
Fuel cell electrolytes
Fuel cells
(proton conducting polymer **membrane** based on functionalized with phosphonic acid derivs. polyazols)
IT **Polybenzimidazoles**
RL: DEV (Device component use); IMF (Industrial manufacture); **PREP (Preparation)**; USES (Uses)
(reaction products with **vinylphosphonic** acid derivs.; proton conducting polymer **membrane** based on functionalized with phosphonic acid derivs. polyazols)
IT **1746-03-8DP, Vinylphosphonic** acid, derivs., reaction products with **polybenzimidazole**
RL: DEV (Device component use); IMF (Industrial manufacture); **PREP (Preparation)**; USES (Uses)
(proton conducting polymer **membrane** based on functionalized with phosphonic acid derivs. polyazols)
IT **1746-03-8DP, Vinylphosphonic** acid, derivs., reaction products with **polybenzimidazole**
RL: DEV (Device component use); IMF (Industrial manufacture); **PREP (Preparation)**; USES (Uses)
(proton conducting polymer **membrane** based on functionalized with phosphonic acid derivs. polyazols)

RN 1746-03-8 HCAPLUS
CN Phosphonic acid, P-ethenyl- (CA INDEX NAME)



L35 ANSWER 8 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2006:534266 HCAPLUS Full-text
DN 145:11319
TI Acid-doped **polybenzimidazole** electrolyte **membranes**, manufacture thereof, and fuel cells therewith
IN Fujibayashi, Fusaki
PA Samsung Sdi Co., Ltd., S. Korea
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2006147164	A	20060608	JP 2004-331655	20041116
PRAI	JP 2004-331655		20041116		

AB The electrolyte **membranes** comprise **polybenzimidazoles**, wherein N-containing heterocyclic rings have C:C bond-containing substituents on their N atoms, and contain ≥1 kinds of acids. In manufacturing of the **membranes**, **polybenzimidazoles** are reacted with compds. having NCO or glycidyl groups and C:C bonds. Fuel cells equipped with the **membranes** show high performance at operation temperature 100-300° and humidity ≤50%.

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): **38**
ST phosphoric acid doped **polybenzimidazole** acrylate electrolyte fuel cell; isocyanatoethyl methacrylate reacted polybenzoxazole electrolyte **membrane** fuel cell; polymer electrolyte fuel cell acid doped **polybenzimidazole**
IT **Polybenzimidazoles**
RL: DEV (Device component use); USES (Uses)
((meth)acrylate group-containing, electrolytes; manufacture of acid-doped **polybenzimidazole** electrolyte **membranes** for fuel cells)
IT Fuel cell electrolytes
(manufacture of acid-doped **polybenzimidazole** electrolyte **membranes** for fuel cells)
IT Fuel cells
(polymer electrolyte; manufacture of acid-doped **polybenzimidazole** electrolyte **membranes** for fuel cells)
IT **26101-19-9DP**, 3,3'-Diaminobenzidine-isophthalic acid copolymer, reaction products with 2-isocyanatoethyl (meth)acrylate
RL: DEV (Device component use); IMF (Industrial manufacture); **PREP (Preparation)**; USES (Uses)
(assumed monomers, electrolytes; manufacture of acid-doped **polybenzimidazole** electrolyte **membranes** for fuel cells)
IT 106-91-2DP, Glycidyl methacrylate, reaction products with poly[2,2'-(m-phenylene)-5,5'-**bibenzimidazole**] 13641-96-8DP, Karenz AOI, reaction products with poly[2,2'-(m-phenylene)-5,5'-

bibenzimidazole] **25734-65-0DP**, Poly[2,2'-(m-phenylene)-5,5'-**bibenzimidazole**], reaction products with 2-isocyanatoethyl (meth)acrylate 30674-80-7DP, Karenz MOI, reaction products with poly[2,2'-(m-phenylene)-5,5'-**bibenzimidazole**]
RL: DEV (Device component use); IMF (Industrial manufacture); **PREP (Preparation)**; USES (Uses)
(electrolytes; manufacture of acid-doped **polybenzimidazole** electrolyte **membranes** for fuel cells)

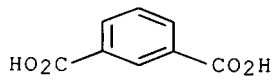
IT **1746-03-8**, **Vinylphosphonic** acid 7664-38-2, Orthophosphoric acid, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(electrolytes; manufacture of acid-doped **polybenzimidazole** electrolyte **membranes** for fuel cells)

IT **26101-19-9DP**, 3,3'-Diaminobenzidine-isophthalic acid copolymer, reaction products with 2-isocyanatoethyl (meth)acrylate
RL: DEV (Device component use); IMF (Industrial manufacture); **PREP (Preparation)**; USES (Uses)
(assumed monomers, electrolytes; manufacture of acid-doped **polybenzimidazole** electrolyte **membranes** for fuel cells)

RN 26101-19-9 HCAPLUS
CN 1,3-Benzenedicarboxylic acid, polymer with [1,1'-biphenyl]-3,3',4,4'-tetramine (CA INDEX NAME)

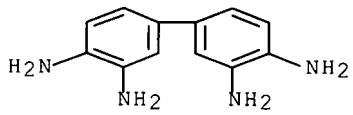
CM 1

CRN 121-91-5
CMF C8 H6 O4



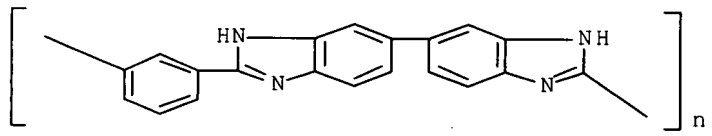
CM 2

CRN 91-95-2
CMF C12 H14 N4

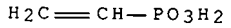


IT **25734-65-0DP**, Poly[2,2'-(m-phenylene)-5,5'-**bibenzimidazole**], reaction products with 2-isocyanatoethyl (meth)acrylate
RL: DEV (Device component use); IMF (Industrial manufacture); **PREP (Preparation)**; USES (Uses)
(electrolytes; manufacture of acid-doped **polybenzimidazole** electrolyte **membranes** for fuel cells)

RN 25734-65-0 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-1,3-phenylene) (CA INDEX NAME)



IT **1746-03-8, Vinylphosphonic** acid
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(electrolytes; manufacture of acid-doped **polybenzimidazole** electrolyte **membranes** for fuel cells)
RN 1746-03-8 HCAPLUS
CN Phosphonic acid, P-ethenyl- (CA INDEX NAME)



L35 ANSWER 9 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2006:463223 HCAPLUS Full-text
DN 144:471431
TI Fuel cell using the solid polymer electrolyte **membrane**
IN Fujibayashi, Fusaki
PA Samsung Sdi Co., Ltd., S. Korea
SO U.S. Pat. Appl. Publ., 9 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2006105217	A1	20060518	US 2005-272642	20051115
	JP 2006147165	A	20060608	JP 2004-331656	20041116
	KR 2006055291	A	20060523	KR 2005-23240	20050321
PRAI	JP 2004-331656	A	20041116		
	KR 2005-23240	A	20050321		

AB A solid polymer electrolyte **membrane** that exhibits stable energy generation performance for a long period of time at an operation temperature of .apprx.100° to .apprx.300°is disclosed in an unhumidified condition or a relative humidity of about 50%. A method for manufacturing the solid polymer electrolyte **membrane** and a fuel cell that uses the solid polymer electrolyte **membrane** are provided. The solid polymer electrolyte **membrane** comprises a polymer compound that has a side chain that includes a unit represented by formula [CH(PO3H2)CH2]n that is formed at a heterocyclic nitrogen atom of a **polybenzimidazole**.

INCL 429033000; 521027000; 429317000; 429314000
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): **38**
ST fuel cell solid polymer electrolyte **membrane**
IT Fuel cell electrolytes
(fuel cell using solid polymer electrolyte **membrane**)
IT **Polybenzimidazoles**

RL: DEV (Device component use); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(fuel cell using solid polymer electrolyte **membrane**)

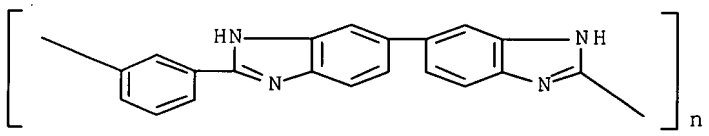
IT Fuel cells
(polymer electrolyte; fuel cell using solid polymer electrolyte **membrane**)

IT 886842-42-8
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(fuel cell using solid polymer electrolyte **membrane**)

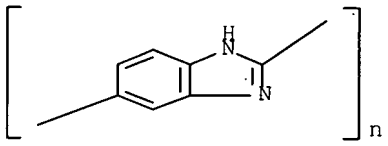
IT 106-91-2DP, Glycidyl methacrylate, reaction products with **polybenzimidazoles 25734-65-0DP**, reaction products with methacrylate esters and **vinylphosphate** 30674-80-7DP, 2-Isocyanatoethyl methacrylate, reaction products with **polybenzimidazoles 32109-42-5DP**, Poly(1H-**benzimidazole**-2,5-diyl), reaction products with methacrylate esters and **vinylphosphate** 36885-49-1DP, Vinyl phosphate, reaction products with **polybenzimidazoles**
RL: DEV (Device component use); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(fuel cell using solid polymer electrolyte **membrane**)

IT **25734-65-0DP**, reaction products with methacrylate esters and **vinylphosphate 32109-42-5DP**, Poly(1H-**benzimidazole**-2,5-diyl), reaction products with methacrylate esters and **vinylphosphate**
RL: DEV (Device component use); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(fuel cell using solid polymer electrolyte **membrane**)

RN 25734-65-0 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-1,3-phenylene) (CA INDEX NAME)



RN 32109-42-5 HCAPLUS
CN Poly(1H-benzimidazole-2,5-diyl) (CA INDEX NAME)



L35 ANSWER 10 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2006:425708 HCAPLUS Full-text
DN 146:338031
TI **Membrane** properties of branched polyprenyl phosphates, postulated as primitive **membrane** constituents
AU Gotoh, Mari; Miki, Ayako; Nagano, Hajime; Ribeiro, Nigel; Elhabiri,

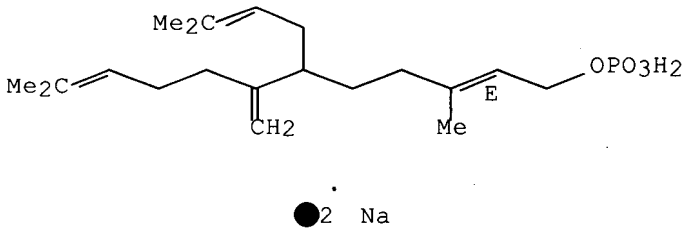
Mourad; Gumienna-Kontecka, Elzbieta; Albrecht-Gary, Anne-Marie; Schmutz, Marc; Ourisson, Guy; Nakatani, Yoichi
CS Centre de Neurochimie, Strasbourg, F-67084, Fr.
SO Chemistry & Biodiversity (2006), 3(4), 434-455
CODEN: CBHIAM; ISSN: 1612-1872
PB Verlag Helvetica Chimica Acta AG
DT Journal
LA English
AB It was postulated earlier that the highly branched isoprenoid alkanes, which are distributed widely in many sediments, may have been derived from the corresponding branched polyprenyl phosphates, potentially present in biomembranes in primitive organisms. These polyprenyl-branched polyprenyl phosphates might be derived by a simple alkylation from non-substituted polyprenyl phosphates, which we postulate to be the precursors of all **membrane** terpenoids. A series of 6-(poly)prenyl-substituted polyprenyl phosphates were prepared and the formation of vesicles from these phosphates, as a function of the substituted-chain length, the position of the double bond, and pH was studied. Nine of the branched polyprenyl phosphates containing 20-30 C-atoms do form vesicles at a physiol. pH; the lipophilicity/hydrophilicity ratio is as expected an important factor. The water permeability through **membranes** of these branched polyprenyl phosphate vesicles was also studied by the stopped-flow/light- scattering method. These highly branched polyprenyl phosphates can more effectively reduce the water permeability than non-substituted polyprenyl phosphates: the vesicles formed by the former are more stable against mech. stress. This reinforces the hypothesis about the origin of the sedimentary polyprenyl-substituted polyprene hydrocarbons.
CC 30-30 (Terpenes and Terpenoids)
ST polyprenyl phosphate branched prepn vesicle **membrane** formation
IT **Membrane**, biological
Vesicles (colloidal)
(preparation and **membrane** properties of branched polyprenyl phosphates, postulated as primitive **membrane** constituents)
IT 929248-26-0P
RL: BYP (Byproduct); **PREP (Preparation)**
(preparation and **membrane** properties of branched polyprenyl phosphates, postulated as primitive **membrane** constituents)
IT 223457-57-6P 368861-89-6P 368861-90-9P **368861-91-0P**
368861-92-1P 368861-93-2P 929248-30-6P 929248-31-7P
929248-32-8P
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); **PREP (Preparation)**; PROC (Process)
(preparation and **membrane** properties of branched polyprenyl phosphates, postulated as primitive **membrane** constituents)
IT 106-72-9 109-80-8, 1,3-Propanedithiol 870-63-3 6874-67-5
35719-26-7 81061-92-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation and **membrane** properties of branched polyprenyl phosphates, postulated as primitive **membrane** constituents)
IT 16933-29-2P 90708-82-0P 328238-68-2P 380153-91-3P 929248-13-5P
929248-14-6P 929248-15-7P 929248-16-8P 929248-17-9P 929248-18-0P
929248-19-1P 929248-20-4P 929248-21-5P 929248-22-6P 929248-23-7P
929248-24-8P 929248-25-9P 929248-27-1P 929248-28-2P 929248-29-3P
929248-34-0P 929248-36-2P 929248-38-4P 929248-39-5P 929248-40-8P
RL: RCT (Reactant); SPN (Synthetic preparation); **PREP (Preparation)**; RACT (Reactant or reagent)
(preparation and **membrane** properties of branched polyprenyl phosphates, postulated as primitive **membrane** constituents)
IT **368861-91-0P 368861-92-1P 368861-93-2P**
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); **PREP (Preparation)**; PROC (Process)

(preparation and **membrane** properties of branched polyprenyl phosphates, postulated as primitive **membrane** constituents)

RN 368861-91-0 HCAPLUS

CN 2,10-Dodecadien-1-ol, 3,11-dimethyl-6-(3-methyl-2-butenyl)-7-methylene-, dihydrogen phosphate, disodium salt, (2E)- (9CI) (CA INDEX NAME)

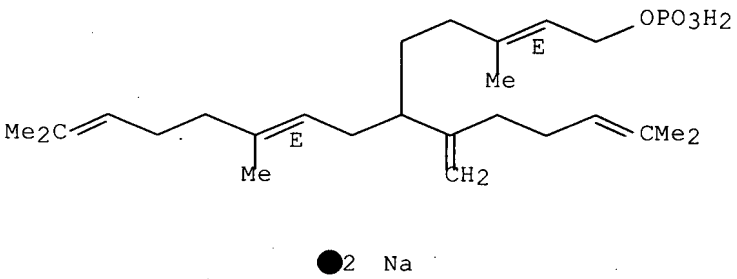
Double bond geometry as shown.



RN 368861-92-1 HCAPLUS

CN 2,8,12-Tetradecatrien-1-ol, 3,9,13-trimethyl-6-(5-methyl-1-methylene-4-hexenyl)-, dihydrogen phosphate, disodium salt, (2E,8E)- (9CI) (CA INDEX NAME)

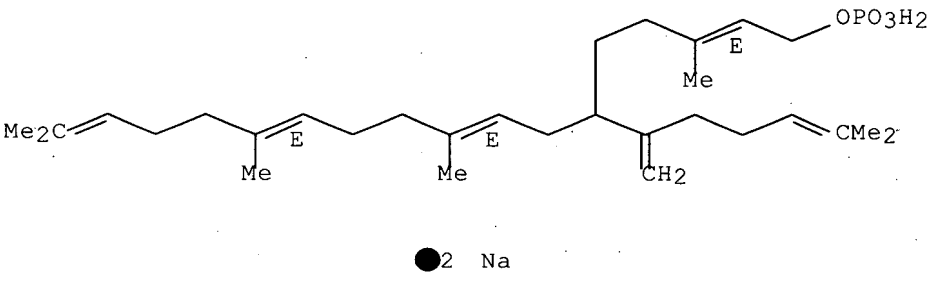
Double bond geometry as shown.



RN 368861-93-2 HCAPLUS

CN 2,8,12,16-Octadecatetraen-1-ol, 3,9,13,17-tetramethyl-6-(5-methyl-1-methylene-4-hexenyl)-, dihydrogen phosphate, disodium salt, (2E,8E,12E)- (9CI) (CA INDEX NAME)

Double bond geometry as shown.



RE.CNT 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD

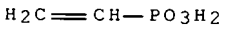
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 11 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2006:117188 HCAPLUS Full-text
DN 144:216037
TI Polymer electrolyte **membrane** fuel cell
IN Kobayashi, Motokazu; Eritate, Shinji; Kanzaki, Yoshio; Ito, Iko
PA Canon Kabushiki Kaisha, Japan
SO U.S. Pat. Appl. Publ., 9 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2006029853	A1	20060209	US 2005-194650	20050802
	JP 2006049225	A	20060216	JP 2004-231592	20040806
	EP 1633012	A2	20060308	EP 2005-16898	20050803
	EP 1633012	A3	20060607		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				
	CN 1731618	A	20060208	CN 2005-10089733	20050805
PRAI	JP 2004-231592	A	20040806		

OS MARPAT 144:216037
AB A polymer electrolyte **membrane** is provided which comprises a copolymer prepared by polymerization of a phosphorus-atom-containing unsatd. monomer comprising at least one phosphorus atom and at least one ethylenically unsatd. bond in a mol., typically represented by the general formula CH2:CR1CO2(CH2CHR2O)nPO(OH)2 (R1 = H or alkyl, R2 = H or substituted or unsubstituted alkyl and n = 1-6) and a monomer or prepolymer of a number-average mol. weight of 2000 or more having an ethylenically unsatd. bond. Thereby, there are provided a polymer electrolyte **membrane** having both the high proton conductivity of the polymer electrolyte **membrane** containing phosphoric acid ester and a high mech. strength, and a polymer electrolyte fuel cell using the polymer electrolyte **membrane**.
INCL 429033000; 429314000; 521027000; 429317000; 429315000
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): **38**
ST polymer electrolyte **membrane** fuel cell
IT Electron beams
(irradiation; polymer electrolyte **membrane** fuel cell)
IT Fuel cells
(proton exchange **membrane**; polymer electrolyte **membrane** fuel cell)
IT Ionic conductivity
(proton; polymer electrolyte **membrane** fuel cell)
IT 947-19-3, Irgacure 184 24650-42-8, Irgacure 651
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(polymer electrolyte **membrane** fuel cell)
IT 1184-84-5DP, Ethenesulfonic acid, polymers with urethane acrylates **1746-03-8DP**, polymers with urethane acrylates 24599-21-1DP, polymers with urethane acrylates 32120-16-4DP, polymers with urethane acrylates and bisacryloyloxyethyl acid phosphate 40074-34-8DP, polymers with urethane acrylates and acryloyloxyethyl acid phosphate 875283-15-1P
RL: DEV (Device component use); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(polymer electrolyte **membrane** fuel cell)

IT **1746-03-8DP**, polymers with urethane acrylates
RL: DEV (Device component use); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(polymer electrolyte **membrane** fuel cell)
RN 1746-03-8 HCAPLUS
CN Phosphonic acid, P-ethenyl- (CA INDEX NAME)



L35 ANSWER 12 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2005:239062 HCAPLUS Full-text
DN 142:299081
TI Phosphonic acid polymers-containing proton-conducting polymer **membrane** coated with a catalyst layer, **membrane** /electrode unit and the use thereof in fuel cells.
IN Belack, Joerg; Kundler, Isabel; Schmidt, Thomas; Uensal, Oemer; Kiefer, Joachim; Padberg, Christoph; Weber, Mathias
PA Pemeas G.m.b.H., Germany
SO PCT Int. Appl., 51 pp.
CODEN: PIXXD2
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005023914	A2	20050317	WO 2004-EP9899	20040904
	WO 2005023914	A3	20050602		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	DE 10340928	A1	20050407	DE 2003-10340928	20030904
	EP 1664166	A2	20060607	EP 2004-764850	20040904
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				
	JP 2007504333	T	20070301	JP 2006-525730	20040904
PRAI	DE 2003-10340928	A	20030904		
	WO 2004-EP9899	W	20040904		

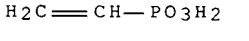
AB A proton-conducting polymer **membrane** containing a catalyst layer with thickness 1-1000 μm from Pt, Pd, Au, Rh, Ir or/and Ru coated with a polymer prepared by polymerization of phosphonic acid monomers is used for manufacture polymer electrolyte **membranes** for fuel cells having high power d. Thus, a **membrane**/electrode unit consisting of **polybenzimidazole membrane** doped with **vinylphosphonic** acid and 2 PTFE electrodes containing Pt on carbon black support coated with **polyvinylphosphonic** acid (prepared by radical polymerization of **vinylphosphonic** acid in the presence of an initiator) and dried at 100° can operate at 100-180°.
IC ICM C08J005-22
ICS H01M008-00; C08F008-00

CC 38-3 (**Plastics** Fabrication and Uses)
ST proton conducting polymer **membrane** catalyst layer phosphonic acid copolymer; **polybenzimidazole** film **vinylphosphonic** acid platinum **polyvinylphosphonic** acid **membrane** manuf
IT Fuel cells
Membrane electrodes
Membranes, nonbiological
(proton-conducting polymer **membrane** coated with catalyst layer coated with polymer prepared by polymerization of phosphonic acid monomers
for polymer electrolyte **membranes**)
IT **Polybenzimidazoles**
RL: DEV (Device component use); USES (Uses)
(proton-conducting polymer **membrane** coated with catalyst layer coated with polymer prepared by polymerization of phosphonic acid monomers
for polymer electrolyte **membranes**)
IT Polyphosphoric acids
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(proton-conducting polymer **membrane** coated with catalyst layer coated with polymer prepared by polymerization of phosphonic acid monomers
for polymer electrolyte **membranes**)
IT Carbon black, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(proton-conducting polymer **membrane** coated with catalyst layer coated with polymer prepared by polymerization of phosphonic acid monomers
for polymer electrolyte **membranes**)
IT 7439-88-5, Iridium, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses 7440-57-5, Gold, uses
RL: CAT (Catalyst use); USES (Uses)
(proton-conducting polymer **membrane** coated with catalyst layer coated with polymer prepared by polymerization of phosphonic acid monomers
for polymer electrolyte **membranes**)
IT **27754-99-0P, Polyvinylphosphonic** acid
RL: DEV (Device component use); IMF (Industrial manufacture); **PREP (Preparation)**; USES (Uses)
(proton-conducting polymer **membrane** coated with catalyst layer coated with polymer prepared by polymerization of phosphonic acid monomers
for polymer electrolyte **membranes**)
IT **1746-03-8, Vinylphosphonic** acid
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(proton-conducting polymer **membrane** coated with catalyst layer coated with polymer prepared by polymerization of phosphonic acid monomers
for polymer electrolyte **membranes**)
IT **27754-99-0P, Polyvinylphosphonic** acid
RL: DEV (Device component use); IMF (Industrial manufacture); **PREP (Preparation)**; USES (Uses)
(proton-conducting polymer **membrane** coated with catalyst layer coated with polymer prepared by polymerization of phosphonic acid monomers
for polymer electrolyte **membranes**)
RN 27754-99-0 HCAPLUS

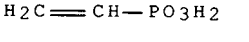
CN Phosphonic acid, P-ethenyl-, homopolymer (CA INDEX NAME)

CM 1

CRN 1746-03-8
CMF C2 H5 O3 P



IT **1746-03-8, Vinylphosphonic** acid
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(proton-conducting polymer **membrane** coated with catalyst layer coated with polymer prepared by polymerization of phosphonic acid monomers
for polymer electrolyte **membranes**)
RN 1746-03-8 HCAPLUS
CN Phosphonic acid, P-ethenyl- (CA INDEX NAME)



L35 ANSWER 13 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2005:174855 HCAPLUS Full-text
DN 142:222528
TI Polymeric **membrane** and method for its manufacture
IN Florjanczyk, Zbigniew; Bzducha, Wojciech; Zygadlo-Monikowska, Ewa; Przyluski, Jan; Borkowska, Regina
PA Politechnika Warszawska, Pol.
SO Pol., 3 pp.
CODEN: POXXA7
DT Patent
LA Polish
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI PL 186347	B1	20031231	PL 1997-320070	19970520
PRAI PL 1997-320070		19970520		

AB The polymeric **membrane**, possibly containing crosslinking agents, e.g., tetraethoxysilicon, glycidyl methacrylate, allyl glycidyl ether, acrylamide, N,N'-methylenebisacrylamide, vinyl acetate, vinylpyridine, contains: poly(vinylidene fluoride) 10-60; vinylphosphoric acid 5-70; dimethylacetamide or DMF or acetonitrile or dimethylsulfoxide as solvent, and crosslinking agents 0-30 weight%. In the method for manufacture of the polymeric **membrane** by mixing components dissolved in solvent and polimerizing them at elevated temperature in the presence of a curing agent and possibly crosslinking agents, e.g., tetraethoxysilicon, glycidyl methacrylate, allyl glycidyl ether, acrylamide, N,N'- methylenebisacrylamide, vinyl acetate, vinylpyridine, and then pouring out the solution on a flat surface, evaporating the solvent and further polymerizing in elevated temperature, 10-60 weight% poly(vinylidene fluoride) and 5-70 weight% vinylphosphoric acid are dissolved in solvent and mixed at ambient temperature The curing agent and crosslinking agents are used in the amts. of 0.1-2.0 and 0-30 weight%, resp., and dimethylacetamide or DMF or acetonitrile or dimethylsulfoxide is used as solvent, and the

polymerization in solution is carried out at 60-80 °C for 0.5-4 h, whereas the polymerization on flat surface is carried out at 60-800 °C for 0.5-2 h or by UV irradiation for 1-30 min.

IC ICM H01M002-16
ICS C08J005-22; C08L027-16; C08F014-22

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): **38**

ST fuel cell ion conductive polymer **membrane**

IT Crosslinking agents
Polymer electrolytes
Polymerization catalysts
(manufacture of polymeric **membrane**)

IT Fuel cell electrolytes
Ionic conductors
(polymeric)

IT Fluoropolymers, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polymeric **membrane** containing)

IT 78-10-4, Tetraethoxysilicon 79-06-1, Acrylamide, reactions 106-91-2, Glycidyl methacrylate 106-92-3, Allyl glycidyl ether 108-05-4, Vinyl acetate, reactions 110-26-9, N,N'-Methylenebisacrylamide 1337-81-1, Vinylpyridine
RL: RCT (Reactant); RACT (Reactant or reagent)
(crosslinking agent; manufacture of polymeric **membrane**)

IT 94-36-0, Benzoyl peroxide, uses
RL: CAT (Catalyst use); USES (Uses)
(manufacture of polymeric **membrane**)

IT **161035-26-3P 328386-96-5P 842130-27-2P**
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(polymeric **membrane** containing)

IT 24937-79-9, Polyvinylidene fluoride
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polymeric **membrane** containing)

IT 67-68-5, Dimethylsulfoxide, uses 68-12-2, DMF, uses 75-05-8, Acetonitrile, uses 127-19-5, Dimethylacetamide
RL: NUU (Other use, unclassified); USES (Uses)
(solvent; manufacture of polymeric **membrane**)

IT **161035-26-3P 328386-96-5P 842130-27-2P**
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(polymeric **membrane** containing)

RN 161035-26-3 HCAPLUS

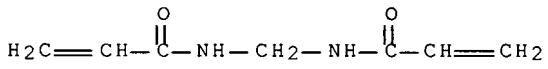
CN Phosphonic acid, ethenyl-, polymer with N,N'-methylenebis[2-propenamide] (9CI) (CA INDEX NAME)

CM 1

CRN 1746-03-8
CMF C2 H5 O3 P

CM 2

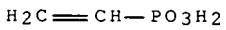
CRN 110-26-9
CMF C7 H10 N2 O2



RN 328386-96-5 HCAPLUS
CN Phosphonic acid, ethenyl-, polymer with N,N'-methylenebis[2-propenamide] and 2-propenamide (9CI) (CA INDEX NAME)

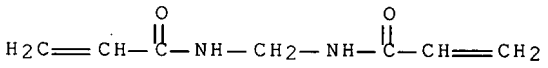
CM 1

CRN 1746-03-8
CMF C2 H5 O3 P



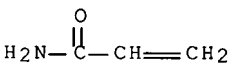
CM 2

CRN 110-26-9
CMF C7 H10 N2 O2



CM 3

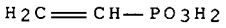
CRN 79-06-1
CMF C3 H5 N O



RN 842130-27-2 HCAPLUS
CN Phosphonic acid, ethenyl-, polymer with 4-ethenylpyridine and N,N'-methylenebis[2-propenamide] (9CI) (CA INDEX NAME)

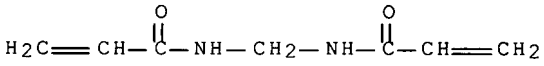
CM 1

CRN 1746-03-8
CMF C2 H5 O3 P



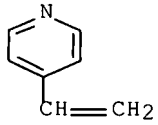
CM 2

CRN 110-26-9
CMF C7 H10 N2 O2



CM 3

CRN 100-43-6
CMF C7 H7 N



L35 ANSWER 14 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2005:123117 HCAPLUS Full-text
DN 142:222572
TI Composite solid polymer electrolyte **membranes** for use in electrochemical applications
IN Ofer, David; Nair, Bindu R.; Stoler, Emily J.; Kovar, Robert F.
PA Foster-Miller Inc., USA
SO U.S. Pat. Appl. Publ., 32 pp., Cont.-in-part of U.S. Ser. No. 750,402.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2005031925	A1	20050210	US 2004-851478	20040522
	US 2002045085	A1	20020418	US 2000-750402	20001228
	US 7052793	B2	20060530		
	WO 2006073474	A2	20060713	WO 2005-US18105	20050520

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,

IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRAI US 1999-261397 A3 19990303
US 2000-750402 A2 20001228
US 1997-57233P P 19970829
US 1999-261349 A3 19990303
US 2004-851478 A 20040522

AB The present invention relates to composite solid polymer electrolyte **membranes** (SPEMs) which include a porous polymer substrate interpenetrated with a water soluble ion-conducting material. SPEMs of the present invention are useful in electrochem. applications, including fuel cells and electrodialysis.

IC ICM H01M008-10
ICS H01M008-00; H01M006-18

INCL 429030000; 429033000; 429314000

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): **38**, 72

ST polymer electrolyte **membrane** use electrochem application; fuel cell polymer electrolyte **membrane**; electrodialysis polymer electrolyte **membrane**

IT Polyamide fibers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(aramid; composite solid polymer electrolyte **membranes** for use in electrochem. applications)

IT Polymers, uses
RL: DEV (Device component use); USES (Uses)
(aromatic, ion conductive; composite solid polymer electrolyte **membranes** for use in electrochem. applications)

IT Polyamides, uses
Polyketones
Polysulfones, uses
RL: DEV (Device component use); USES (Uses)
(aromatic, sulfonated; composite solid polymer electrolyte **membranes** for use in electrochem. applications)

IT Polyimides, uses
RL: DEV (Device component use); USES (Uses)
(carboxylated and phosphonated and sulfonated; composite solid polymer electrolyte **membranes** for use in electrochem. applications)

IT Electrochemical cells
Fuel cell electrolytes
Polymer electrolytes
Sulfonation
(composite solid polymer electrolyte **membranes** for use in electrochem. applications)

IT Polybenzoxazoles
RL: DEV (Device component use); USES (Uses)
(composite solid polymer electrolyte **membranes** for use in electrochem. applications)

IT **Polybenzimidazoles**
RL: TEM (Technical or engineered material use); USES (Uses)
(composite solid polymer electrolyte **membranes** for use in electrochem. applications)

IT Polybenzothiazoles
RL: TEM (Technical or engineered material use); USES (Uses)
(composite solid polymer electrolyte **membranes** for use in electrochem. applications)

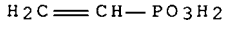
IT Dialyzers
(electrodialyzers, **membranes**; composite solid polymer

electrolyte **membranes** for use in electrochem. applications)
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(fluorine- and sulfo-containing, ionomers; composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT Ionomers
RL: DEV (Device component use); USES (Uses)
(fluoropolymers; composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(ionomers; composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT Liquid crystals, polymeric
(lyotropic; composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT Ionomers
RL: DEV (Device component use); USES (Uses)
(partially fluorinated; composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT Synthetic polymeric fibers, uses
RL: DEV (Device component use); USES (Uses)
(polybenzazole, sulfonated; composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT Polysulfones, uses
RL: DEV (Device component use); USES (Uses)
(polyether-, aromatic, sulfonated; composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT Polyketones
Polysulfones, uses
RL: DEV (Device component use); USES (Uses)
(polyether-, sulfonated; composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT Polyethers, uses
RL: DEV (Device component use); USES (Uses)
(polyketone-, sulfonated; composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT Sulfonic acids, uses
RL: DEV (Device component use); USES (Uses)
(polymers, fluoro; composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(polyoxyalkylene-, sulfo-containing, ionomers; composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT Ionomers
RL: DEV (Device component use); USES (Uses)
(polyoxyalkylenes, fluorine- and sulfo-containing; composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT Polysulfones, uses
RL: DEV (Device component use); USES (Uses)
(polyphenyl-, sulfonated; composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT Polyquinoxalines
RL: DEV (Device component use); USES (Uses)
(polyphenylquinoxalines, sulfonated; composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT Polyethers, uses
RL: DEV (Device component use); USES (Uses)
(polysulfone-, aromatic, sulfonated; composite solid polymer electrolyte

membranes for use in electrochem. applications)
IT Polyethers, uses
Polyphenyls
RL: DEV (Device component use); USES (Uses)
(polysulfone-, sulfonated; composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT Polymers, uses
RL: DEV (Device component use); USES (Uses)
(sulfo-containing, fluoro; composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT Polyoxyphenylenes
Polysulfones, uses
RL: DEV (Device component use); USES (Uses)
(sulfonated; composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT 9003-01-4, Polyacrylic acid 26101-52-0, Polyvinyl sulfonic acid **27754-99-0**, Polyvinyl phosphonic acid 50851-57-5, Polystyrene sulfonic acid 63496-24-2, Nafion EW 1100
RL: DEV (Device component use); USES (Uses)
(composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT 686768-99-0P 843614-17-5P
RL: DEV (Device component use); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT 3177-22-8P 25135-51-7P 25667-42-9DP, Ultrason E, sulfonated 154281-38-6DP, Radel R, sulfonated 220998-11-8P
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT 25035-37-4, Poly(1,4-phenyleneterephthalamide)
RL: TEM (Technical or engineered material use); USES (Uses)
(composite solid polymer electrolyte **membranes** for use in electrochem. applications)
IT **27754-99-0**, Polyvinyl phosphonic acid
RL: DEV (Device component use); USES (Uses)
(composite solid polymer electrolyte **membranes** for use in electrochem. applications)
RN 27754-99-0 HCAPLUS
CN Phosphonic acid, P-ethenyl-, homopolymer (CA INDEX NAME)

CM 1

CRN 1746-03-8
CMF C2 H5 O3 P



L35 ANSWER 15 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:1059364 HCAPLUS Full-text
DN 142:41497
TI Fuel cell **membrane** containing zirconium phosphate
IN Yang, Zhen-Yu
PA E.I. Dupont de Nemours and Company, USA
SO PCT Int. Appl., 27 pp.

CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2004106349	A1	20041209	WO 2004-US16431	20040521
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2006275636	A1	20061207	US 2006-566940	20060213
PRAI US 2003-473870P	P	20030527		
WO 2004-US16431	W	20040521		

OS MARPAT 142:41497

AB The present invention provides for a compound having the following structure: Zr(O3PZqYnX)2-m(O3PR)m, wherein X = a functional group such as CO2H, PO(OH)2, and SO3H, and SO2NHSO2W, wherein W = aryl of 6 to 10 carbon atoms or Y; Y = perfluoro-linear, branched or cyclic alkylene group, wherein the alkylene is 1-20 carbon atoms, or a fluorinated group containing at least one substituent selected from the group consisting of oxygen, chlorine and bromine; Z = alkylene of 1-12 carbon atoms, aryl of 6-10 carbon atoms, or a heterocyclic aryl group of 3-10 carbons atoms; R = alkyl of 1-12 carbon atoms, aryl of 6-10 carbon atoms, substituted alkyl, or substituted aryl, wherein the substituent is selected from the group consisting of F, Cl, perfluoroalkyl, alkyl of 1-12 carbon atoms and aryl of 6-10 carbon atoms; n = 0 or 1; q = 0 or 1; and m = 0 to 1.5; with the proviso that when n = 0, and q = 1, Z = at least one heterocyclic group having 3 to 10 carbon atoms, 1 to 5 nitrogen atoms and 0 to 4 oxygen atoms. The invention also provides a polymer electrolyte **membrane** , a catalyst coated **membrane** and a fuel cell having this compound

IC ICM C07F009-02
ICS C07F009-38
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 29
ST fuel cell **membrane** zirconium phosphate
IT Catalysts
(electrocatalysts; fuel cell **membrane** containing zirconium phosphate)
IT Ceramics
(fibers; fuel cell **membrane** containing zirconium phosphate)
IT Fuel cell electrolytes
(fuel cell **membrane** containing zirconium phosphate)
IT Alcohols, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(fuel cell **membrane** containing zirconium phosphate)
IT Fuel cells
(polymer electrolyte; fuel cell **membrane** containing zirconium phosphate)
IT Fuel cells
(solid electrolyte; fuel cell **membrane** containing zirconium phosphate)
IT 804482-79-9P 804482-82-4P 804482-84-6P **804482-86-8P**

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(fuel cell **membrane** containing zirconium phosphate)

IT 804482-88-0P 804482-90-4P 804482-92-6P
RL: DEV (Device component use); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(fuel cell **membrane** containing zirconium phosphate)

IT 134704-98-6P 804482-97-1P 804483-02-1P 804483-04-3P 804483-05-4P
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); **PREP (Preparation)**; RACT (Reactant or reagent)
(fuel cell **membrane** containing zirconium phosphate)

IT 804482-99-3P
RL: PRP (Properties); SPN (Synthetic preparation); **PREP (Preparation)**
(fuel cell **membrane** containing zirconium phosphate)

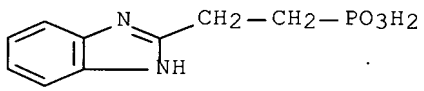
IT **1067-87-4**, Diethyl allylphosphonate 7648-30-8 7699-43-6, Zirconyl dichloride 66137-74-4 80077-69-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(fuel cell **membrane** containing zirconium phosphate)

IT **76300-73-7P** 804482-96-0P
RL: RCT (Reactant); SPN (Synthetic preparation); **PREP (Preparation)**; RACT (Reactant or reagent)
(fuel cell **membrane** containing zirconium phosphate)

IT 67-56-1, Methanol, uses 1333-74-0, Hydrogen, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(fuel cell **membrane** containing zirconium phosphate)

IT **804482-86-8P**
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(fuel cell **membrane** containing zirconium phosphate)

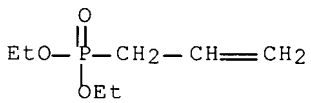
RN 804482-86-8 HCAPLUS
CN Phosphonic acid, [2-(1H-benzimidazol-2-yl)ethyl]-, zirconium(4+) salt (2:1) (9CI) (CA INDEX NAME)



●1/2 Zr(IV)

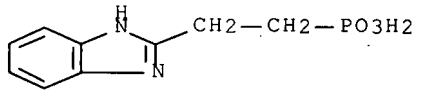
IT **1067-87-4**, Diethyl allylphosphonate
RL: RCT (Reactant); RACT (Reactant or reagent)
(fuel cell **membrane** containing zirconium phosphate)

RN 1067-87-4 HCAPLUS
CN Phosphonic acid, P-2-propen-1-yl-, diethyl ester (CA INDEX NAME)



IT **76300-73-7P**

RL: RCT (Reactant); SPN (Synthetic preparation); **PREP (Preparation)**; RACT (Reactant or reagent)
(fuel cell **membrane** containing zirconium phosphate)
RN 76300-73-7 HCAPLUS
CN Phosphonic acid, [2-(1H-benzimidazol-2-yl)ethyl]- (9CI) (CA INDEX NAME)



RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 16 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:876920 HCAPLUS Full-text
DN 141:368363
TI The proton conductive **membrane**, its production method, and the fuel cell which uses the proton conductive **membrane**
IN Wariishi, Koji
PA Fuji Photo Film Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 17 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004296316	A	20041021	JP 2003-88550	20030327
PRAI	JP 2003-88550		20030327		

AB The disclosed proton conductive **membrane** is a composite of silsesquioxane type crosslinked 3-dimensional structural body and an organic polymer having P-containing proton donor groups on side chaines. Also disclosed are the **membrane** production method and direct methanol type fuel cells which uses the **membrane**. The **membrane** exhibits high proton conductivity, good acid-leaching resistance, and low methanol permeability.

IC ICM H01B001-06
ICS H01B013-00; H01M008-02; H01M008-10
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST proton conductive **membrane** silsesquioxane composite direct methanol fuel cell
IT Silsesquioxanes
RL: DEV (Device component use); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(blend with **vinylphosphonic** acid polymer; proton-conductive **membranes** for direct methanol fuel cells)
IT Fuel cells
(direct methanol; proton conductive **membranes** for)
IT **Membranes**, nonbiological
(proton conductive; silsesquioxane-vinylphosphonic acid polymer blends)
IT **27754-99-0P**, Poly(**vinylphosphonic** acid) 35705-94-3P
RL: DEV (Device component use); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(blend with silsesquioxanes; proton-conductive **membranes** for direct methanol fuel cells)
IT 29434-25-1DP, Poly(vinyltriethoxysilane), polymer with 3-glycidyloxypropyltrimethoxysilane 56325-93-0P, 3-

Glycidyloxypropyltrimethoxysilane homopolymer 777945-18-3P
RL: DEV (Device component use); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(blend with **vinylphosphonic** acid polymer; proton-conductive **membranes** for direct methanol fuel cells)

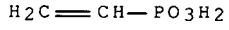
IT 220690-84-6P
RL: DEV (Device component use); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(proton-conductive **membranes** for direct methanol fuel cells)

IT **27754-99-0P**, Poly(**vinylphosphonic** acid)
RL: DEV (Device component use); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(blend with silsesquioxanes; proton-conductive **membranes** for direct methanol fuel cells)

RN 27754-99-0 HCAPLUS
CN Phosphonic acid, P-ethenyl-, homopolymer (CA INDEX NAME)

CM 1

CRN 1746-03-8
CMF C2 H5 O3 P



L35 ANSWER 17 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:913467 HCAPLUS Full-text
DN 139:384023
TI Method of preparation of polymer electrolyte **membrane** for fuel cells
IN Kiefer, Joachim; Uensal, Oemer
PA Celanese Ventures GmbH, Germany
SO PCT Int. Appl., 48 pp.
CODEN: PIXXD2
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003096465	A1	20031120	WO 2003-EP4914	20030512
	W: BR, CA, CN, JP, KR, MX, US				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
	DE 10220818	A1	20031120	DE 2002-10220818	20020510
	CA 2485564	A1	20031120	CA 2003-2485564	20030512
	EP 1506591	A1	20050216	EP 2003-727465	20030512
	EP 1506591	B1	20061129		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
	CN 1653640	A	20050810	CN 2003-810598	20030512
	JP 2005525683	T	20050825	JP 2004-504331	20030512
	AT 347180	T	20061215	AT 2003-727465	20030512
	US 2006166067	A1	20060727	US 2004-513895	20041208
PRAI	DE 2002-10220818	A	20020510		
	WO 2003-EP4914	W	20030512		

AB The invention relates to a proton-conducting polymer electrolyte **membrane** which is based on polyvinylphosphonic acid/polyvinylsulfonic acid polymers and

can be used for a variety of purposes due to the excellent chemical and thermal properties thereof. The inventive **membrane** is particularly suitable as a polymer electrolyte **membrane** in PEM fuel cells.

IC ICM H01M008-10
ICS C08J005-22; B01D071-40

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): **38**

ST polymer electrolyte **membrane** fuel cell

IT Fuel cell electrolytes
(method of preparation of polymer electrolyte **membrane** for fuel cells)

IT Fuel cells
(solid electrolyte; method of preparation of polymer electrolyte **membrane** for fuel cells)

IT **110161-68-7DP, Vinylphosphonic** acid-vinylsulfonic acid copolymer, derivs.
RL: DEV (Device component use); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(method of preparation of polymer electrolyte **membrane** for fuel cells)

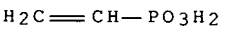
IT **110161-68-7DP, Vinylphosphonic** acid-vinylsulfonic acid copolymer, derivs.
RL: DEV (Device component use); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(method of preparation of polymer electrolyte **membrane** for fuel cells)

RN 110161-68-7 HCAPLUS

CN Ethenesulfonic acid, polymer with ethenylphosphonic acid (9CI) (CA INDEX NAME)

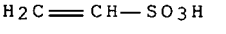
CM 1

CRN 1746-03-8
CMF C2 H5 O3 P



CM 2

CRN 1184-84-5
CMF C2 H4 O3 S



RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 18 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:719543 HCAPLUS Full-text
DN 139:248013
TI Manufacture of proton-conducting fuel cell electrolyte **membrane** having reduced methanol permeability

IN Kiefer, Joachim; Uensal, Oemer; Calundann, Gordon; Crivello, James
PA Celanese Ventures GmbH, Germany
SO PCT Int. Appl., 58 pp.
CODEN: PIXXD2
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003074597	A1	20030912	WO 2003-EP2397	20030304
	W: BR, CA, CN, JP, KR, MX, US				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
	DE 10209685	A1	20030918	DE 2002-10209685	20020306
	DE 10210499	A1	20030925	DE 2002-10210499	20020311
	CA 2478530	A1	20030912	CA 2003-2478530	20030304
	EP 1483316	A1	20041208	EP 2003-743390	20030304
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
	US 2005118477	A1	20050602	US 2003-506387	20030304
	JP 2005519428	T	20050630	JP 2003-573059	20030304
	CN 1639239	A	20050713	CN 2003-805300	20030304
PRAI	DE 2002-10209685	A	20020306		
	DE 2002-10210499	A	20020311		
	WO 2003-EP2397	W	20030304		

AB A title **membrane** was manufactured by (A) swelling a polymer film with a liquid comprising vinylsulfonic acid and (B) polymerization of the vinylsulfonic acid present in the liquid used in step (A). For example, heating aqueous solution containing vinylsulfonic acid (obtained by acidification of Na vinylsulfonate with acidic ion exchanger) and **vinylphosphonic** acid for 1 h at 70°, adding CN-120 (epoxy acrylate) and Irgacure 184, heating the solution for 30 min at 70°, immersing a **polybenzimidazole** film in the mixture and heating for 3 h at 80°, placing the resulting film between transparent polypropylene (PP) films, irradiating both sides of the laminate and separating PP films gave a title **membrane**. The typical weight gain of the **membrane** was 350%.

IC ICM C08J007-16
ICS H01M008-10; C08J005-22

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): **35**, **38**

ST polyvinylsulfonic acid **polybenzimidazole** film proton conducting electrolyte **membrane** manuf; **polybenzimidazole** film vinylsulfonic **vinylphosphonic** acid polymn fuel cell **membrane**; proton conducting **membrane** manuf vinylsulfonic acid epoxy acrylate polymer

IT **Polybenzimidazoles**
RL: TEM (Technical or engineered material use); USES (Uses)
(films; manufacture of vinylsulfonic acid copolymer proton-conducting fuel cell electrolyte **membrane**)

IT Fuel cell electrolytes
Fuel cell separators
(manufacture of vinylsulfonic acid copolymer proton-conducting fuel cell electrolyte **membrane**)

IT **596130-67-5P**, CN 120-**Vinylphosphonic** acid-Vinylsulfonic acid copolymer **596130-68-6P**, CN 120-Styrenesulfonic acid-**Vinylphosphonic** acid copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(**membrane**; manufacture of vinylsulfonic acid copolymer proton-conducting fuel cell electrolyte **membrane**)

IT **596130-67-5P**, CN 120-**Vinylphosphonic** acid-Vinylsulfonic acid copolymer **596130-68-6P**, CN 120-Styrenesulfonic acid-**Vinylphosphonic** acid copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(**membrane**; manufacture of vinylsulfonic acid copolymer proton-conducting fuel cell electrolyte **membrane**)

RN 596130-67-5 HCAPLUS
CN Phosphonic acid, ethenyl-, polymer with CN 120 and ethenesulfonic acid (9CI) (CA INDEX NAME)

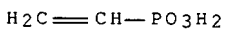
CM 1

CRN 163206-65-3
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

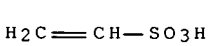
CM 2

CRN 1746-03-8
CMF C2 H5 O3 P



CM 3

CRN 1184-84-5
CMF C2 H4 O3 S



RN 596130-68-6 HCAPLUS
CN Phosphonic acid, ethenyl-, polymer with CN 120 and ethenylbenzenesulfonic acid (9CI) (CA INDEX NAME)

CM 1

CRN 163206-65-3
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

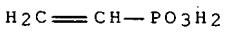
CRN 26914-43-2
CMF C8 H8 O3 S
CCI IDS

D1—CH═CH2

D1—SO3H

CM 3

CRN 1746-03-8
CMF C2 H5 O3 P



H2C═CH—PO3H2

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 19 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:719542 HCAPLUS Full-text
DN 139:248012
TI Manufacture of proton-conducting electrolyte **membrane** for use at high temperatures and in fuel cells
IN Uensal, Oemer; Kiefer, Joachim
PA Celanese Ventures GmbH, Germany
SO PCT Int. Appl., 59 pp.
CODEN: PIXXD2
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003074596	A1	20030912	WO 2003-EP2399	20030304
	W: BR, CA, CN, JP, KR, MX, US				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
	DE 10209419	A1	20030925	DE 2002-10209419	20020305
	CA 2477864	A1	20030912	CA 2003-2477864	20030304
	EP 1483314	A1	20041208	EP 2003-711950	20030304
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
	US 2005084727	A1	20050421	US 2003-506880	20030304
	CN 1649944	A	20050803	CN 2003-810121	20030304
	JP 2005527073	T	20050908	JP 2003-573058	20030304
PRAI	DE 2002-10209419	A	20020305		
	WO 2003-EP2399	W	20030304		

AB A title **membrane** is manufactured by (A) swelling a polymer film with a liquid containing a **vinylphosphonic** acid, and (B) polymerizing the **vinylphosphonic** acid present in the liquid introduced in step (A). For example, soaking a **polybenzimidazole** film for 1.5-2.5 h at 80° in a solution containing 1 part H2O and 10 parts 97% **vinylphosphonic** acid, soaking the swollen film in a solution containing 10 parts **vinylphosphonic** acid and 1 part aqueous solution

containing 0.1% 2,2'-azobis(isobutyramidine)·2HCl and heating the film for 1 h at 80° gave a title **membrane** having conductivity 15.3 mS/cm (160°).

IC ICM C08J005-22
ICS C08K005-5317

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): **35, 38**

ST proton conducting electrolyte **membrane** manuf **vinylphosphonic** acid polymer; **polybenzimidazole** film **vinylphosphonic** acid polymn fuel cell **membrane** manuf; **polyvinylphosphonic** acid **polybenzimidazole** film proton conducting electrolyte **membrane** manuf

IT **Membranes**, nonbiological
(elec. conductive; manufacture of proton-conducting electrolyte **membrane** for use at high temps. and in fuel cells)

IT **Polybenzimidazoles**
RL: TEM (Technical or engineered material use); USES (Uses)
(films; manufacture of proton-conducting electrolyte **membrane** for use at high temps. and in fuel cells)

IT Fuel cell separators
(manufacture of proton-conducting electrolyte **membrane** for use at high temps. and as)

IT **161035-26-3P**, N,N'-Methylenebisacrylamide-**Vinylphosphonic** acid copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(crosslinked, **membrane**; manufacture of proton-conducting electrolyte **membrane** for use at high temps. and in fuel cells)

IT **27754-99-0P**, **Vinylphosphonic** acid polymer
596044-62-1P, CN 120-**Vinylphosphonic** acid copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(**membrane**; manufacture of proton-conducting electrolyte **membrane** for use at high temps. and in fuel cells)

IT **161035-26-3P**, N,N'-Methylenebisacrylamide-**Vinylphosphonic** acid copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(crosslinked, **membrane**; manufacture of proton-conducting electrolyte **membrane** for use at high temps. and in fuel cells)

RN 161035-26-3 HCAPLUS

CN Phosphonic acid, ethenyl-, polymer with N,N'-methylenebis[2-propenamide] (9CI) (CA INDEX NAME)

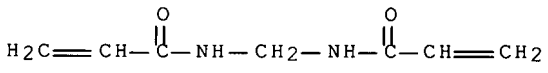
CM 1

CRN 1746-03-8
CMF C2 H5 O3 P

CM 2

CRN 110-26-9

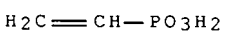
CMF C7 H10 N2 O2



IT **27754-99-0P, Vinylphosphonic** acid polymer
596044-62-1P, CN 120-**Vinylphosphonic** acid copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(**membrane**; manufacture of proton-conducting electrolyte **membrane** for use at high temps. and in fuel cells)
RN 27754-99-0 HCAPLUS
CN Phosphonic acid, P-ethenyl-, homopolymer (CA INDEX NAME)

CM 1

CRN 1746-03-8
CMF C2 H5 O3 P



RN 596044-62-1 HCAPLUS
CN Phosphonic acid, ethenyl-, polymer with CN 120 (9CI) (CA INDEX NAME)

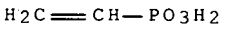
CM 1

CRN 163206-65-3
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 1746-03-8
CMF C2 H5 O3 P



RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 20 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:719541 HCAPLUS Full-text
DN 139:231745
TI Manufacture of proton-conducting polymer **membranes** for fuel cells from mixtures of polymers with vinylsulfonic acid monomers
IN Kiefer, Joachim; Uensal, Oemer
PA Celanese Ventures GmbH, Germany
SO PCT Int. Appl., 57 pp.

CODEN: PIXXD2
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003074595	A1	20030912	WO 2003-EP2395	20030304
	W: BR, CA, CN, JP, KR, MX, US				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
	DE 10209684	A1	20030925	DE 2002-10209684	20020306
	DE 10210500	A1	20031009	DE 2002-10210500	20020311
	CA 2477863	A1	20030912	CA 2003-2477863	20030304
	EP 1485427	A1	20041215	EP 2003-711948	20030304
	EP 1485427	B1	20060118		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
	US 2005118478	A1	20050602	US 2003-506622	20030304
	CN 1649945	A	20050803	CN 2003-810165	20030304
	JP 2005526875	T	20050908	JP 2003-573057	20030304
	AT 316111	T	20060215	AT 2003-711948	20030304
PRAI	DE 2002-10209684	A	20020306		
	DE 2002-10210500	A	20020311		
	WO 2003-EP2395	W	20030304		

AB A proton-conducting polymer **membrane** based on poly(vinylsulfonic acid), useful especially as a polymer-electrolyte-**membrane** (PEM) in PEM-fuel cells, is manufactured by (A) mixing a polymer with vinylsulfonic acid monomer, (B) forming a planar structure by using the mixture from step (A) on a support, and (C) polymerizing the vinylsulfonic acid monomer in the planar structure prepared in step (B). A title **membrane** was prepared by treating **polybenzimidazole** (PBI) with H3PO4 for 4 h at 160°, neutralizing and washing the PBI with H2O, drying, dissolving the PBI in **vinylphosphonic** acid, adding aqueous vinylsulfonic acid solution (preparation from Na vinylsulfonate given), casting a film on a PET polyester substrate and irradiating with electron beam.

IC ICM C08J005-22
ICS B01D007-00; H01M008-02

CC 38-3 (**Plastics** Fabrication and Uses)
Section cross-reference(s): **35**, 76

ST **polybenzimidazole** vinylsulfonic **vinylphosphonic** acid copolymn proton conducting **membrane** manuf; interpenetrating network **polybenzimidazole** vinylsulfonic **vinylphosphonic** acid copolymer electrolyte **membrane**; fuel cell **membrane** **polybenzimidazole** vinylsulfonic **vinylphosphonic** acid copolymer manuf; electron beam polymn vinylsulfonic **vinylphosphonic** acid fuel cell **membrane**

IT **Membranes**, nonbiological
(conductive; manufacture of proton-conducting polymer **membranes** for fuel cells from mixts. of polymers with vinylsulfonic acid monomers)

IT **Membranes**, nonbiological
(elec. conductive; manufacture of proton-conducting polymer **membranes** for fuel cells from mixts. of polymers with vinylsulfonic acid monomers)

IT Fuel cell separators
Fuel cells
(manufacture of proton-conducting polymer **membranes** for fuel cells from mixts. of polymers with vinylsulfonic acid monomers)

IT **Polybenzimidazoles**
RL: TEM (Technical or engineered material use); USES (Uses)

(**membranes**; manufacture of proton-conducting polymer **membranes** for fuel cells from mixts. of polymers with vinylsulfonic acid monomers)

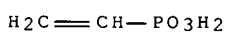
IT **110161-68-7P, Vinylphosphonic** acid-Vinylsulfonic acid copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(interpenetrating network with **polybenzimidazole, membrane**; manufacture of proton-conducting polymer **membranes** for fuel cells from mixts. of polymers with vinylsulfonic acid monomers)

IT **110161-68-7P, Vinylphosphonic** acid-Vinylsulfonic acid copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(interpenetrating network with **polybenzimidazole, membrane**; manufacture of proton-conducting polymer **membranes** for fuel cells from mixts. of polymers with vinylsulfonic acid monomers)

RN 110161-68-7 HCAPLUS
CN Ethenesulfonic acid, polymer with ethenylphosphonic acid (9CI) (CA INDEX NAME)

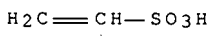
CM 1

CRN 1746-03-8
CMF C2 H5 O3 P



CM 2

CRN 1184-84-5
CMF C2 H4 O3 S



RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 21 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:531452 HCAPLUS Full-text
DN 139:367364
TI Plasma polymerized electrolyte **membranes** and electrodes for miniaturized fuel cells
AU Mex, Laurent; Sussiek, Martin; Mueller, Joerg
CS Department of Semiconductor Technology, Technical University Hamburg-Harburg, Hamburg, Germany
SO Chemical Engineering Communications (2003), 190(9), 1085-1095
CODEN: CEGCAK; ISSN: 0098-6445
PB Taylor & Francis, Inc.
DT Journal
LA English

AB Miniaturized fuel cells for portable systems like cellular phones, laptops, or other conventionally battery-driven devices, as well as long-term stationary monitoring electronics, have a potential market, especially for direct methanol fuel cells. However, design and fabrication technologies have to be adopted that allow the desired miniaturization of such a fuel cell. Thin film technologies like plasma polymerization and sputtering are suitable techniques for realizing **membrane** electrode assemblies only several microns in thickness that can be deposited on thin substrates (e.g., silicon wafers, porous foils, or others). Also, plasma polymerized films exhibit a high degree of cross-linkage and are pinhole free even for films of only a few hundred nanometer in thickness, in contrast to conventionally polymerized films. In case of an electrolyte **membrane** these benefits yield a reduction of **membrane** resistance and a decreased methanol crossover. The authors have developed plasma polymerized electrolyte **membranes** using tetrafluoroethylene to generate the polymeric backbone of an ion-conductive **membrane** and vinylphosphonic acid to incorporate acid groups, which are responsible for the proton conductivity Depending on the process parameters these films exhibit an ion conductivity in the range of 100 mS/cm to 200 mS/cm (at 80°), determined by ac-impedance measurements. These films were optimized with respect to their use in direct methanol fuel cells to achieve a high ion conductivity and high thermal resistance. Porous graphite electrodes were fabricated using an acetylene plasma polymerization process. These films are combined with the plasma polymerized electrolyte **membrane** to form a thin film **membrane** electrode assembly.

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): **35**, **38**, 76

ST plasma polymn electrolyte **membrane** electrode fuel cell fluoropolymer graphite; graphite catalytic electrode plasma catalyst sputtering TFE vinylphosphonic acid

IT Fuel cell electrodes
(effects of treatment at 200 °C for 45 h)

IT **Membranes**, nonbiological
(elec. conductive; plasma polymerized electrolyte **membranes** and electrodes for miniaturized fuel cells)

IT Sputtering cathodes
(made of Pt and Pt/Ru; effects of treatment at 200 °C for 45 h)

IT Thermal stability
(of copolymer; effects of treatment at 200 °C for 45 h)

IT Fuel cells
Membrane electrodes
Polyelectrolytes
(plasma polymerized electrolyte **membranes** and electrodes for miniaturized fuel cells)

IT Polymerization
(plasma; plasma polymerized electrolyte **membranes** and electrodes for miniaturized fuel cells)

IT Ionic conductivity
(proton; plasma polymerized electrolyte **membranes** and electrodes for miniaturized fuel cells)

IT 7440-44-0P, Carbon, preparation
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(amorphous; effects of treatment at 200 °C for 45 h)

IT 7440-18-8, Ruthenium, uses
RL: CAT (Catalyst use); DEV (Device component use); USES (Uses)
(composites with graphite and platinum; plasma polymerized electrolyte **membranes** and electrodes for miniaturized fuel cells)

IT 7440-06-4, Platinum, uses
RL: CAT (Catalyst use); DEV (Device component use); USES (Uses)
(composites with graphite, and ruthenium; plasma polymerized electrolyte

membranes and electrodes for miniaturized fuel cells)

IT 74-86-2, Acetylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(effects of treatment at 200 °C for 45 h)

IT 116-14-3, Tetrafluoroethylene, reactions 1746-03-8, Vinylphosphonic acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(plasma polymerized electrolyte **membranes** and electrodes for miniaturized fuel cells)

IT 7782-44-7, Oxygen, uses
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(plasma polymerized electrolyte **membranes** and electrodes for miniaturized fuel cells)

IT 67-56-1, Methanol, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(plasma polymerized electrolyte **membranes** and electrodes for miniaturized fuel cells)

IT **269733-13-3P**, Tetrafluoroethylene-**vinylphosphonic** acid copolymer
RL: PRP (Properties); SPN (Synthetic preparation); **PREP (Preparation)**
(plasma polymerized; plasma polymerized electrolyte **membranes** and electrodes for miniaturized fuel cells)

IT 7782-42-5P, Graphite, uses
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(porous, electrode, composite with Pt or Pt/Ru; plasma polymerized electrolyte **membranes** and electrodes for miniaturized fuel cells)

IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); USES (Uses)
(porous; plasma polymerized electrolyte **membranes** and electrodes for miniaturized fuel cells)

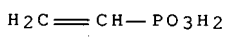
IT **269733-13-3P**, Tetrafluoroethylene-**vinylphosphonic** acid copolymer
RL: PRP (Properties); SPN (Synthetic preparation); **PREP (Preparation)**
(plasma polymerized; plasma polymerized electrolyte **membranes** and electrodes for miniaturized fuel cells)

RN 269733-13-3 HCAPLUS

CN Phosphonic acid, ethenyl-, polymer with tetrafluoroethene (9CI) (CA INDEX NAME)

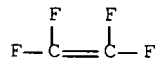
CM 1

CRN 1746-03-8
CMF C2 H5 O3 P



CM 2

CRN 116-14-3
CMF C2 F4

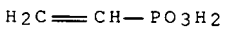


RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 22 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:666020 HCAPLUS Full-text
DN 138:40188
TI Synthesis of ion exchange **membranes** from ozonized high density polyethylene
AU Zouahri, A.; Elmidaoui, A.; Ameduri, B.; Hervaud, Y.; Boutevin, B.
CS Departement du Milieu Physique, Laboratoire de Chimie des Sols, INRA, Rabat, Morocco
SO European Polymer Journal (2002), 38(11), 2247-2254
CODEN: EUPJAG; ISSN: 0014-3057
PB Elsevier Science Ltd.
DT Journal
LA English
AB The synthesis and the characterization of graft copolymers prepared from ozonized high d. polyethylene (HDPE) are described. The powder of HDPE was treated with ozone in well defined conditions and then copolymd. with monomers, such as, acrylic acid (AA), N,N-dimethylamino-2 Et methacrylate (MADAME) and vinyl phosphonic acid (VPA). Cationic exchange **membranes** were prepared from the grafted copolymers of AA and VPA and anionic exchange **membrane** from the grafted copolymer of MADAME. The obtained copolymers were characterized by the grafting rate, FTIR spectroscopy, scanning electronic microscopy, thickness, exchange capacity and elec. resistance.
CC 38-3 (**Plastics** Fabrication and Uses)
ST ethylene graft copolymer ion exchanger **membrane**; ozone treatment polyethylene graft polymn vinyl; acrylic acid ethylene graft copolymer **membrane**; dimethylaminoethyl methacrylate ethylene graft copolymer **membrane**; vinylphosphonic acid ethylene graft copolymer **membrane**
IT Anion exchange **membranes**
Cation exchange **membranes**
Electric resistance
Polymer morphology
(preparation of ion exchange **membranes** from ozonized high-d. polyethylene and vinyl monomers)
IT 98846-22-1P, Acrylic acid-ethylene graft copolymer 107227-29-2P, Dimethylamino-2-ethyl methacrylate-ethylene graft copolymer **478375-91-6P**, Ethylene-**vinylphosphonic** acid graft copolymer
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(preparation of ion exchange **membranes** from ozonized high-d. polyethylene and vinyl monomers)
IT **478375-91-6P**, Ethylene-**vinylphosphonic** acid graft copolymer
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(preparation of ion exchange **membranes** from ozonized high-d. polyethylene and vinyl monomers)
RN 478375-91-6 HCAPLUS
CN Phosphonic acid, ethenyl-, polymer with ethene, graft (9CI) (CA INDEX NAME)

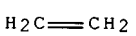
CM 1

CRN 1746-03-8
CMF C2 H5 O3 P



CM 2

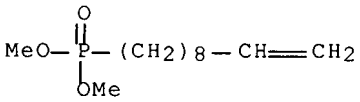
CRN 74-85-1
CMF C2 H4



RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 23 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2000:431290 HCAPLUS Full-text
DN 133:204637
TI Progress toward the synthesis of a biomimetic **membrane**
AU Gano, Kyle W.; Myles, David C.
CS Department of Chemistry and Biochemistry, University of California, Los Angeles, CA, 90095-1569, USA
SO Tetrahedron Letters (2000), 41(22), 4247-4250
CODEN: TELEAY; ISSN: 0040-4039
PB Elsevier Science Ltd.
DT Journal
LA English
OS CASREACT 133:204637
AB Ubiquinone has antioxidant properties and is important in the conversion of products from glycolysis and the citric acid cycle to ATP. We report the synthesis of the necessary components of a biol. **membrane** mimic that can serve as a model system for elucidating the third step in the prokaryotic biosynthesis of ubiquinone.
CC 7-4 (Enzymes)
Section cross-reference(s): 6
ST ubiquinone biosynthesis methyltransferase **membrane** biomimetic prepn model
IT **Membrane**, biological
Molecular modeling
(synthesis of a biomimetic **membrane**)
IT Ubiquinones
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(synthesis of a biomimetic **membrane**)
IT 290818-44-9P 290818-60-9P
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); **PREP (Preparation)**; USES (Uses)
(synthesis of a biomimetic **membrane**)
IT 9033-25-4, O-Methyltransferase
RL: BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)

(synthesis of a biomimetic **membrane**)
IT 95-56-7 13019-22-2, 9-Decen-1-ol
RL: RCT (Reactant); RACT (Reactant or reagent)
(synthesis of a biomimetic **membrane**)
IT 14381-51-2P 131034-47-4P 234111-46-7P **290818-42-7P**
290818-43-8P 290818-46-1P 290818-49-4P 290818-52-9P 290818-54-1P
290818-56-3P 290818-58-5P
RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
(Preparation); RACT (Reactant or reagent)
(synthesis of a biomimetic **membrane**)
IT **290818-42-7P**
RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
(Preparation); RACT (Reactant or reagent)
(synthesis of a biomimetic **membrane**)
RN 290818-42-7 HCAPLUS
CN Phosphonic acid, 9-decenyl-, dimethyl ester (9CI) (CA INDEX NAME)



RE.CNT 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 24 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2000:260778 HCAPLUS Full-text
DN 132:294808
TI Composite solid polymer electrolyte **membranes**
IN Formato, Richard M.; Kovar, Robert F.; Osenar, Paul; Landrau, Nelson; Rubin, Leslie S.
PA Foster-Miller, Inc., USA
SO PCT Int. Appl., 95 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 4

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2000022684	A2	20000420	WO 1999-US19476	19990826
WO 2000022684	A3	20000720		
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
WO 9910165	A1	19990304	WO 1998-US17898	19980828
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI,				

CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

US 6248469	B1	20010619	US 1999-261349	19990303
CA 2342237	A1	20000420	CA 1999-2342237	19990826
AU 200023415	A	20000501	AU 2000-23415	19990826
EP 1116292	A2	20010718	EP 1999-967058	19990826
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2003528420	T	20030924	JP 2000-576501	19990826
PRAI WO 1998-US17898	W	19980828		
US 1999-261349	A	19990303		
US 1997-57233P	P	19970829		
WO 1998-US178	W	19980828		
WO 1999-US19476	W	19990826		

AB The present invention relates to composite solid polymer electrolyte **membranes** (SPEMs) which include a porous polymer substrate (typically a liquid crystal polymer) interpenetrated with an ion-conducting material (typically a perfluorinated ionomer). SPEMs of the present invention are useful in electrochem. applications, including fuel cells and electrodialysis.

IC ICM H01M

CC 38-3 (**Plastics** Fabrication and Uses)
Section cross-reference(s): **52**

ST composite solid polymer electrolyte **membrane**; fuel cell polymer electrolyte **membrane**; electrodialysis polymer electrolyte **membrane**; liq crystal polymer interpenetrating network electrolyte; perfluorinated ionomer interpenetrating network electrolyte

IT Pervaporation
(apparatus; composite solid polymer electrolyte **membranes**)

IT Polyamides, uses
Polyketones
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(aromatic; composite solid polymer electrolyte **membranes**)

IT Dialyzers
Electrolytic cells
Interpenetrating polymer networks
Liquid crystals, polymeric
Primary batteries
(composite solid polymer electrolyte **membranes**)

IT **Polybenzimidazoles**
Polybenzothiazoles
Polybenzoxazoles
Polyimides, uses
Polyoxyphenylenes
Polyphenyls
Polysulfones, uses
Polythiophenylenes
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(composite solid polymer electrolyte **membranes**)

IT Fuel cells
(direct methanol or hydrogen; composite solid polymer electrolyte **membranes**)

IT Dialyzers
(electrodialyzers; composite solid polymer electrolyte **membranes**)

IT Polyimides, uses
Polyimides, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)

(fluorine-containing; composite solid polymer electrolyte **membranes**)

IT Ionomers
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(fluoropolymers; composite solid polymer electrolyte **membranes**)

IT Fluoropolymers, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(ionomers; composite solid polymer electrolyte **membranes**)

IT Polymer electrolytes
(**membrane**; composite solid polymer electrolyte **membranes**)

IT Polyimides, uses
Polyimides, uses
Polyketones
Polyketones
Polysulfones, uses
Polysulfones, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(polyether-; composite solid polymer electrolyte **membranes**)

IT Fluoropolymers, uses
Fluoropolymers, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(polyimide-; composite solid polymer electrolyte **membranes**)

IT Polyethers, uses
Polyethers, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(polyimide-; composite solid polymer electrolyte **membranes**)

IT Polyethers, uses
Polyethers, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(polyketone-; composite solid polymer electrolyte **membranes**)

IT Polyquinoxalines
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(polyphenylquinoxalines; composite solid polymer electrolyte **membranes**)

IT Polysulfones, uses
Polysulfones, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(polysulfide-, aromatic; composite solid polymer electrolyte **membranes**)

IT Polysulfides
Polysulfides
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(polysulfone-, aromatic; composite solid polymer electrolyte **membranes**)

IT Polyethers, uses
Polyethers, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)

(polysulfone-; composite solid polymer electrolyte **membranes**)

IT **Membranes**, nonbiological
(solid polymer electrolyte; composite solid polymer electrolyte **membranes**)

IT Plastics, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(thermoplastics; composite solid polymer electrolyte **membranes**)

IT Plastics, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(thermosetting; composite solid polymer electrolyte **membranes**)

IT 25667-42-9DP, sulfonated
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(Ultrason; composite solid polymer electrolyte **membranes**)

IT 25135-51-7DP, Udel, sulfonated 25212-74-2DP, PPS, sulfonated 63496-24-2P, Nafion EW1100 154281-38-6DP, Radel R, sulfonated 220998-11-8P, 4,4'-(Hexafluoroisopropylidene)bis(phthalic anhydride-m-Phenylenediamine-sodium 2,4-diaminobenzenesulfonate copolymer
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(composite solid polymer electrolyte **membranes**)

IT 88-63-1P, 2,4-Diaminobenzenesulfonic acid 3177-22-8P, Sodium 2,4-diaminobenzenesulfonate
RL: IMF (Industrial manufacture); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(composite solid polymer electrolyte **membranes**)

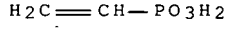
IT 9003-01-4, Polyacrylic acid 24938-64-5 24938-67-8, Poly[oxy(2,6-dimethyl-1,4-phenylene)] 24938-68-9, 2,6-Diphenylphenol homopolymer, sru 25035-37-4, p-Phenylenediamine-terephthalic acid copolymer 25134-01-4, 2,6-Dimethylphenol homopolymer 26101-52-0, Polyvinyl sulfonic acid 26353-84-4, 2,6-Diphenylphenol homopolymer **27754-99-0**, Polyvinyl phosphonic acid 50851-57-5, Polystyrene sulfonic acid 264624-35-3, Trifluorostyrenesulfonic acid homopolymer
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(composite solid polymer electrolyte **membranes**)

IT **27754-99-0**, Polyvinyl phosphonic acid
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(composite solid polymer electrolyte **membranes**)

RN 27754-99-0 HCAPLUS
CN Phosphonic acid, P-ethenyl-, homopolymer (CA INDEX NAME)

CM 1

CRN 1746-03-8
CMF C2 H5 O3 P



L35 ANSWER 25 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1999:566112 HCAPLUS Full-text
DN 131:185914
TI **Membrane** filtration of polymer containing solutions
IN Zakikhani, Mohsen
PA Albright & Wilson Uk Limited, UK
SO PCT Int. Appl., 16 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9943744	A1	19990902	WO 1999-GB299	19990128
	W: AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GD, GE, HR, HU, ID, IL, IN, IS, JP, KP, KR, LC, LK, LR, MG, MK, MN, MX, NO, NZ, PL, SG, SK, SL, TR, TT, UA, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	EP 939100	A1	19990901	EP 1998-306674	19980820
	EP 939100	B1	20050126		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	AT 287921	T	20050215	AT 1998-306674	19980820
	US 6162340	A	20001219	US 1998-139791	19980825
	CA 2321727	A1	19990902	CA 1999-2321727	19990128
	AU 9922908	A	19990915	AU 1999-22908	19990128
	AU 737961	B2	20010906		
	BR 9907840	A	20001024	BR 1999-7840	19990128
	JP 2002504610	T	20020212	JP 2000-533490	19990128
	NZ 505533	A	20021220	NZ 1999-505533	19990128
	IN 193696	A1	20040731	IN 2000-MN164	20000707
	NO 2000004166	A	20000821	NO 2000-4166	20000821
PRAI	GB 1998-3812	A	19980225		
	WO 1999-GB299	W	19990128		

AB In a method for recovering polymers in a substantially pure form from a solution containing the polymers (e.g., acrylic acid-vinylphosphonic acid copolymer), the solution is 1st treated with a reactant (e.g. an acid and/or a sequestrant; 98% H2SO4) to form the free polymers and salts of the reactant and 2nd the solution is treated to remove the salts therefrom and in a final stage the polymer solution is concentrated (e.g. to 20% solution) and the polymers are recovered (spray drying). The 2nd treatment step may consist of **membrane**-filtration (e.g., ES 404 **membrane**), ion-exchange or electrodialysis.

IC ICM C08J011-08
ICS C08J003-14
CC 38-2 (**Plastics** Fabrication and Uses)
ST acrylic acid copolymer **membrane** filtration recovery; vinylphosphonic acid copolymer recovery; sulfuric acid treatment polymer soln; spray dry recovery polymer; ion exchanger electrodialysis recovery polymer
IT Electrodialysis
Ion exchange **membranes**
Membrane filtration
(**membrane** filtration of polymer containing solns.)
IT 2809-21-4, 1-Hydroxyethane-1,1-diphosphonic acid
RL: TEM (Technical or engineered material use); USES (Uses)
(Briquest ADPA 60A, polymer treated by; **membrane** filtration of polymer containing solns.)
IT **27754-99-0P**, Poly(**vinylphosphonic** acid)
27936-88-5P, Acrylic acid-**vinylphosphonic** acid copolymer

34162-79-3DP, terpolymeric derivs. **35065-09-9P**
55972-36-6P, Methacrylic acid-**vinylphosphonic** acid
copolymer **167682-78-2P**, Acrylic acid-vinylsulfonic acid-
vinylphosphonic acid copolymer
RL: PUR (Purification or recovery); **PREP (Preparation)**
(**membrane** filtration of polymer containing solns.)

IT 111972-91-9, GR 90PP 123174-39-0, ES 404 190086-17-0, Filmtec NF 45
240132-34-7, GR 95PP
RL: TEM (Technical or engineered material use); USES (Uses)
(**membranes**; **membrane** filtration of polymer containing
solns.)

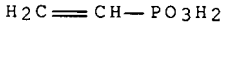
IT 7647-01-0, Hydrochloric acid, uses 7664-38-2, Phosphoric acid, uses
7664-93-9, Sulfuric acid, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polymer treated by; **membrane** filtration of polymer containing
solns.)

IT **27754-99-0P**, Poly(**vinylphosphonic** acid)
27936-88-5P, Acrylic acid-**vinylphosphonic** acid copolymer
34162-79-3DP, terpolymeric derivs. **35065-09-9P**
55972-36-6P, Methacrylic acid-**vinylphosphonic** acid
copolymer **167682-78-2P**, Acrylic acid-vinylsulfonic acid-
vinylphosphonic acid copolymer
RL: PUR (Purification or recovery); **PREP (Preparation)**
(**membrane** filtration of polymer containing solns.)

RN 27754-99-0 HCAPLUS
CN Phosphonic acid, P-ethenyl-, homopolymer (CA INDEX NAME)

CM 1

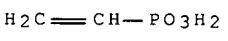
CRN 1746-03-8
CMF C2 H5 O3 P



RN 27936-88-5 HCAPLUS
CN 2-Propenoic acid, polymer with P-ethenylphosphonic acid (CA INDEX NAME)

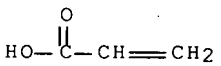
CM 1

CRN 1746-03-8
CMF C2 H5 O3 P

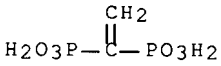


CM 2

CRN 79-10-7
CMF C3 H4 O2



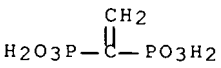
RN 34162-79-3 HCAPLUS
CN Phosphonic acid, ethenylidenebis- (9CI) (CA INDEX NAME)



RN 35065-09-9 HCAPLUS
CN Phosphonic acid, ethenylidenebis-, homopolymer (9CI) (CA INDEX NAME)

CM 1

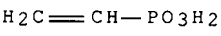
CRN 34162-79-3
CMF C2 H6 O6 P2



RN 55972-36-6 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with ethenylphosphonic acid (9CI) (CA INDEX NAME)

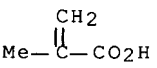
CM 1

CRN 1746-03-8
CMF C2 H5 O3 P



CM 2

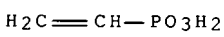
CRN 79-41-4
CMF C4 H6 O2



RN 167682-78-2 HCAPLUS
CN 2-Propenoic acid, polymer with ethenesulfonic acid and ethenylphosphonic acid (9CI) (CA INDEX NAME)

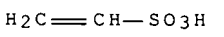
CM 1

CRN 1746-03-8
CMF C2 H5 O3 P



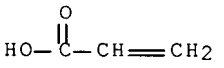
CM 2

CRN 1184-84-5
CMF C2 H4 O3 S



CM 3

CRN 79-10-7
CMF C3 H4 O2



RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 26 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1993:554642 HCAPLUS Full-text
DN 119:154642
TI Mannosylphosphoryldolichol-mediated reactions in oligosaccharide-P-P-dolichol biosynthesis. Recognition of the saturated α-isoprene unit of the mannosyl donor by pig brain mannosyltransferases
AU Rush, Jeffrey S.; Shelling, Judith G.; Zingg, Nathan S.; Ray, Paul H.; Waechter, Charles J.
CS Coll. Med., Univ. Kentucky, Lexington, KY, 40536, USA
SO Journal of Biological Chemistry (1993), 268(18), 13110-17
CODEN: JBCHA3; ISSN: 0021-9258
DT Journal
LA English
AB The specificity of Man-P-Dol:Man5-8GlcNAc2-P-P-Dol (Oligo-P-P-Dol) mannosyltransferase activity in pig brain was investigated by comparing a variety of mannosylphosphorylisoprenols as mannosyl donors. For this comparison the β-Man-P-isoprenols were synthesized using a partially purified preparation of mannosylphosphorylundecaprenol (Man-P-Undec) synthase from Micrococcus luteus. The bacterial mannosyltransferase efficiently catalyzed the transfer of mannose from GDP-[3H]Man to a series of defined isoprenyl monophosphate substrates. Two α-Man-P-dolichols were synthesized chemical and also examined as substrates. When exogenous β-[3H]Man-P-Dol95 was tested as a substrate for Man-P-Dol:Oligo-P-P- Dol mannosyltransferase activity in pig brain microsomes, [3H]mannose was actively transferred to endogenous Oligo-P-

P-Dol acceptors. The major enzymically labeled product was Man9GlcNAc2-P-P-Dol. Under identical conditions β-[3H]mannosylphosphorylpolyprenol (Man-P-Poly95) was an extremely poor substrate, indicating that the saturated α-isoprene unit of the dolichyl moiety is critical for recognition of the lipophilic mannosyl donor by the endoplasmic reticulum-associated mannosyltransferase(s). When Man-P-dolichols containing 2, 11, or 19 isoprene units were compared, the initial rates for the mannosyl transfer reactions and the affinity of the enzyme(s) for the mannophospholipid substrate increased with the length and hydrophobicity of the polyisoprenol chain. The anomeric configuration of the mannosyl moiety is apparently essential because the brain mannosyltransferases exhibited a strong preference for β-Man-P-Dolichols over the corresponding chemical synthesized α-stereoisomers. These results: 1) describe a simple two-step procedure for obtaining a partially purified preparation of Man-P-Undec synthase that efficiently synthesizes a variety of β-Man-P-isoprenols; 2) indicate that pig brain Man-P-Dol:Oligo-P-P-Dol mannosyltransferase activity is relatively specific for lipophilic mannosyl donors containing 19 isoprene units with a β-Man 1-P group attached to the saturated α-isoprene unit of dolichol; and 3) emphasize the importance of the reduction of the α-isoprene unit in the biosynthesis and function of Dol-P in mammalian cells.

CC 7-3 (Enzymes)

ST brain mannosyltransferases specificity mannosylphosphorylisoprenol; isoprenol alpha moiety recognition mannosyltransferases brain; synthase mannosylphosphorylundecaprenol Micrococcus

IT Micrococcus luteus
(mannosylphosphorylundecaprenol synthase of, purification and mannosylphosphorylisoprenols formation with)

IT Cell **membrane**
(mannosylphosphorylundecaprenol synthase purification from, of Micrococcus luteus)

IT Brain, composition
(mannosyltransferase of heavy microsome of, substrate specificity of)

IT Microsome
(mannosyltransferase of heavy, of brain, substrate specificity of)

IT Molecular structure-biological activity relationship
(mannosyltransferase substrate, of mannosylphosphorylisoprenols)

IT Stereochemistry
(of mannosyltransferase reaction of brain)

IT Michaelis constant
(of mannosyltransferase, of brain microsome)

IT 55274-39-0 55331-63-0
RL: BIOL (Biological study)
(mannosyltransferase of brain microsome specificity for, structure relation to)

IT 62213-44-9P
RL: **PREP (Preparation)**
(of Micrococcus luteus **membrane**, purification and mannosylphosphorylisoprenols formation by)

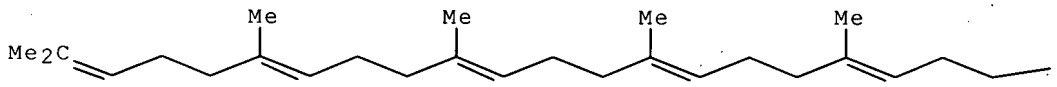
IT 106-22-9, Citronellol 12777-41-2 55274-41-4
RL: BIOL (Biological study)
(phosphorylation of)

IT 12698-55-4P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation and enzymic mannosylation of)

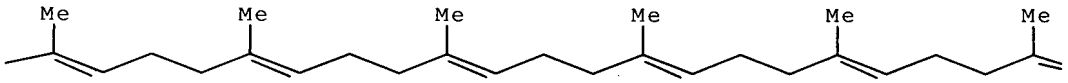
IT 57816-15-6P 66757-23-1P **150034-80-3P** 150034-81-4P
150133-01-0P
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(preparation of and brain microsome mannosyltransferase specificity for, structure relation to)

IT 150071-61-7P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of, enzymic)
IT 129447-09-2
RL: BIOL (Biological study)
(substrate specificity of, of brain heavy microsomes, for mannosylphosphorylisoprenols)
IT **150034-80-3P 150133-01-0P**
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(preparation of and brain microsome mannosyltransferase specificity for, structure relation to)
RN 150034-80-3 HCAPLUS
CN β-D-Mannopyranose, 1-(4,8,12,16,20,24,28,32,36,40,44,48,52,56,60,64,68,72,76-nonadecamethyl-3,7,11,15,19,23,27,31,35,39,43,47,51,55,59,63,67,71,75-heptaheptacontanonadecaenyl hydrogen phosphate) (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



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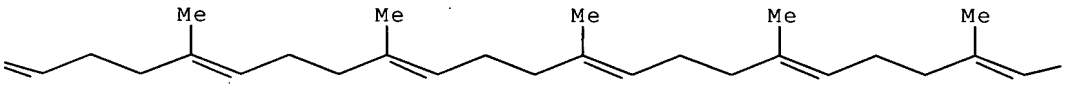
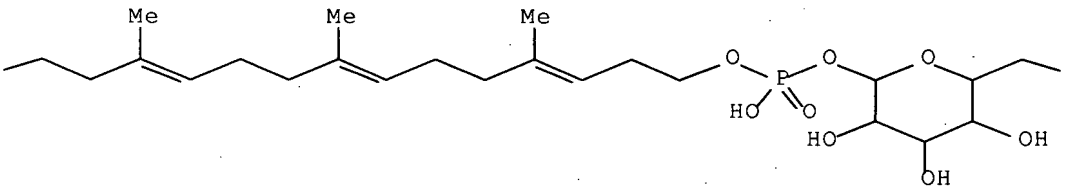


PAGE 1-D

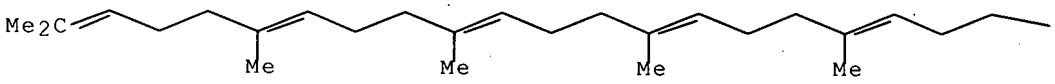


PAGE 1-E

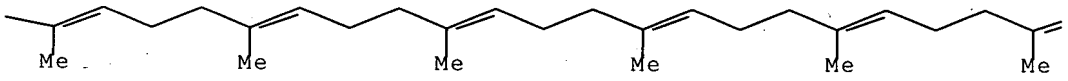
—OH

RN 150133-01-0 HCAPLUS
CN β-D-Mannopyranose, 1-(3,7,11,15,19,23,27,31,35,39,43,47,51,55,59,63,67,71,75-nonadecamethyl-6,10,14,18,22,26,30,34,38,42,46,50,54,58,62,66,70,74-hexaheptacontaoctadecaenyl hydrogen phosphate) (9CI) (CA INDEX NAME)

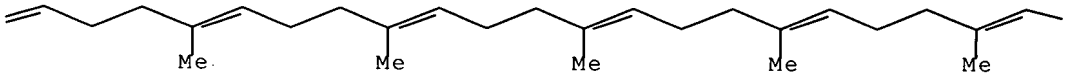
PAGE 1-A



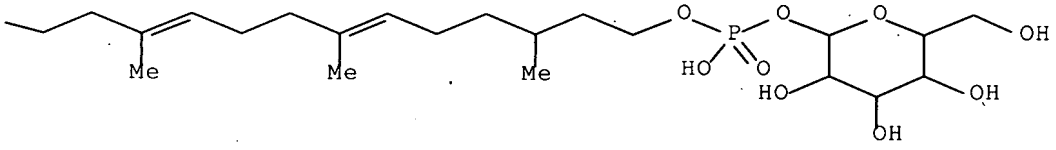
PAGE 1-B



PAGE 1-C



PAGE 1-D



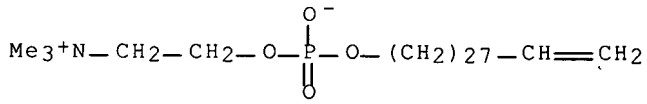
L35 ANSWER 27 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1989:550159 HCAPLUS Full-text
DN 111:150159
TI Laminated **membranes** and laminated polymer **membranes** and their manufacture
IN Umibe, Katsuaki; Nakaya, Tadao
PA Oki Electric Industry Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF

DT Patent
LA Japanese
FAN.CNT 1

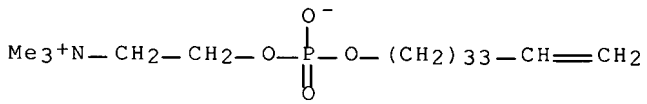
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 63221184	A	19880914	JP 1987-53978	19870311
PRAI	JP 1987-53978		19870311		

AB A laminated **membrane** contains a multiple number of monolayers of the phospholipid analog CH2:CH(CH2)nOPO3(CH2)2NR1R2R3 (I; n = 27-39; R1, R2, R3 = alkyl; R1 and R2 may link to form a ring) and a laminated polymer **membrane** contains a multiple number of monolayers of the phospholipid analog-containing polymers[II; (CH2CH)m(CH2)nOPO3(CH2)2NR1R2R3; n, R1, R2, R3 = same as above; m = d.p.; R1 and R2 may link to form a ring]. I or II compds. are spread on a water surface to form monolayers which are laminated on a solid base to give a **membrane** (laminated II **membranes** are further irradiated for polymn). I (n = 27; R1, R2, R3 = Me) (III) was prepared by reaction of 2-chloro-1,3,2-dioxaphosphorane with O2 to yield 2-chloro-2-oxo-1,3,2-dioxaphosphorane, which was then reacted with ω-nonacosenol. III was formed into monolayers, which were then laminated to form a **membrane**.

IC ICM C09K003-00
ICS B01D013-00; B01D013-04; B32B009-00; C07F009-09; C08F030-02
ICA G01N027-30; G01N027-40
CC 9-15 (Biochemical Methods)
Section cross-reference(s): 23
ST laminated phospholipid analog **membrane** manuf
IT **Membranes**
(laminated phospholipid or phospholipid polymer, manufacture of)
IT Phospholipids, uses and miscellaneous
RL: USES (Uses)
(analogs, laminated **membranes** or polymer **membranes** containing)
IT 822-39-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation of)
IT 6609-64-9P 122931-55-9P
RL: RCT (Reactant); SPN (Synthetic preparation); **PREP (Preparation)**; RACT (Reactant or reagent)
(preparation and reaction of, in preparation of laminated **membranes**)
IT **119700-64-0P 119700-66-2P**
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(preparation of, for laminated **membrane** or polymer **membrane** manufacture)
IT 121045-75-8, 28-Nonacosen-1-ol 122931-54-8, 34-Pentatriaconten-1-ol
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with chlorooxodioxaphosphorane, in preparation of laminated **membranes**)
IT 75-50-3, Trimethylamine, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with phospholipid analog, in preparation of laminated **membranes**)
IT **119700-64-0P 119700-66-2P**
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(preparation of, for laminated **membrane** or polymer **membrane** manufacture)
RN 119700-64-0 HCAPLUS
CN Ethanaminium, 2-[[hydroxy(28-nonacosenyloxy)phosphinyl]oxy]-N,N,N-trimethyl-, inner salt (9CI) (CA INDEX NAME)



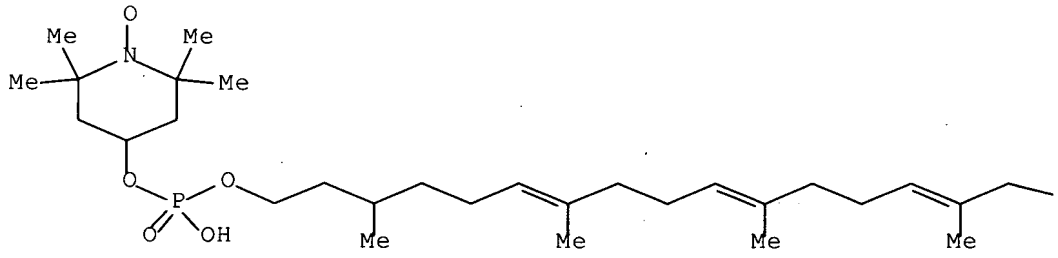
RN 119700-66-2 HCAPLUS
CN Ethanaminium, 2-[[hydroxy(34-pentatriacontenyloxy)phosphinyl]oxy]-N,N,N-trimethyl-, inner salt (9CI) (CA INDEX NAME)



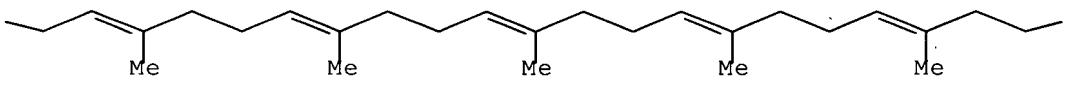
L35 ANSWER 28 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1980:421107 HCAPLUS Full-text
DN 93:21107
TI Paramagnetic isoprenoid carrier lipids. 1. Chemical synthesis and incorporation into model **membranes**
AU McCloskey, Michael A.; Troy, Frederic A.
CS Sch. Med., Univ. California, Davis, CA, 95616, USA
SO Biochemistry (1980), 19(10), 2056-60
CODEN: BICHAW; ISSN: 0006-2960
DT Journal
LA English
AB The synthesis, purification, and characterization of 2 types of spin-labeled glycosyl carrier lipids and shorter chain isoprenols are described. As models for phosphorylated lipid intermediates, phosphodiesters of tempol and the prenols dolichol, ficaprenol, solanesol, phytol, and farnesol were prepared For analogs of neutral species each prenol was esterified with a pyrrolidinecarboxylic acid based label. Tripropylbenzenesulfonyl chloride was used as the condensing agent in both cases. Phosphodiester yields ranged from 36% for the 55-C compound to >66% for the 95-C prenol. Both types of probes were incorporated into phospholipid bilayers, where each became oriented with the artificial head group at, or very close to, the water-hydrocarbon interface. ESR spectra of the phosphodiesters was matrix-dependent, indicating rapid isotropic tumbling in CHCl3 but highly anisotropic reorientation in unsatd. phosphatidylcholine (PC) hosts. Rotation or large amplitude oscillation about either or both the tempo C4-O linkage or the P-O (chain) bond as well as whole mol. rotation within the bilayer could account for the obsd x-axis anisotropy. Segmental motion within the polyprene chain does not appear to be a determinant.
CC 6-5 (General Biochemistry)
Section cross-reference(s): 30
ST dolichol spin label prepn dynamics; ficaprenol spin label prepn dynamics; solanesol spin label prepn dynamics; farnesol spin label prepn dynamics; phytol spin label prepn dynamics; **membrane** polyprenol dynamics; polyprenol spin label prepn dynamics
IT Conformation and Conformers
(of isoprenoid spin-labeled derivs.)
IT Molecular dynamics
(of isoprenoid spin-labeled derivs., in lipid **membranes**)
IT Electron spin resonance

(of polyprenol spin-labeled derivs.)
IT Molecular rotation
(of polyprenol spin-labeled derivs., in lipid **membranes**)
IT **Membranes** and Diaphragms
(polyprenol spin label dynamics in)
IT Isoprenoids
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(polyprenols, spin-labeled derivs., preparation and **membrane** dynamics of)
IT 73359-07-6P 73359-08-7P 73359-09-8P 73359-10-1P 73359-11-2P
73359-12-3P 73359-13-4P 73359-14-5P 73359-15-6P **73359-16-7P**
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(preparation and **membrane** dynamics of)
IT 2154-68-9 22690-04-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with polyprenols)
IT 150-86-7 4602-84-0 13190-97-1 73367-16-5 73395-19-4
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with spin label phosphate or carboxylate)
IT **73359-16-7P**
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(preparation and **membrane** dynamics of)
RN 73359-16-7 HCAPLUS
CN 1-Piperidinyloxy, 4-[[hydroxy[(3,7,11,15,19,23,27,31,35,39,43,47,51,55,59,63,67,71,75-nonadecamethyl-6,10,14,18,22,26,30,34,38,42,46,50,54,58,62,66,70,74-hexaheptacontaoctadecaenyl)oxy]phosphinyl]oxy]-2,2,6,6-tetramethyl-(9CI) (CA INDEX NAME)

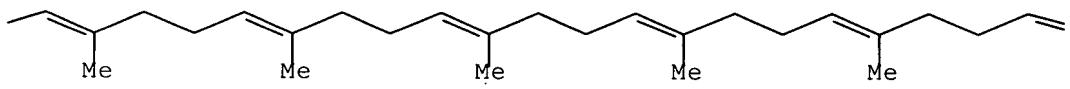
PAGE 1-A



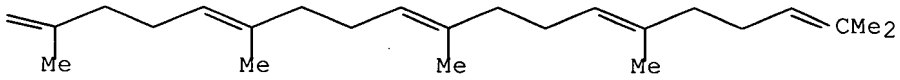
PAGE 1-B



PAGE 1-C



PAGE 1-D



L35 ANSWER 29 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1978:438175 HCAPLUS Full-text
DN 89:38175
TI Comparison of polyprenyl derivatives in yeast glycosyl transfer reactions
AU Pless, Dorothy D.; Palamarczyk, Grazyna
CS Inst. Biochem. Biophys., Pol. Acad. Sci., Warsaw, Pol.
SO Biochimica et Biophysica Acta, Lipids and Lipid Metabolism (1978), 529(1), 21-8
CODEN: BBLLA6; ISSN: 0005-2760
DT Journal
LA English
AB Seven homogenous, semisynthetic polyprenyl phosphates ranging in chain length from 20 to 95 C atoms and differing in the presence of saturated isoprene residues, were tested in several glycosyl transfer reactions catalyzed by yeast **membranes**. They were compared not only as acceptors of sugar phosphate from nucleoside diphosphate sugars but also as donors of the carbohydrate units to endogenous protein. All polyprenyl phosphates tested were effective substrates for the synthesis of mannosyl-lipid and differed by factor of ≤2 in activity. In contrast, a 5-8-fold preference for derivs. containing a saturated rather than an unsatd. α-isoprene residue was observed for utilization of the mannosyl-lipids as substrates for mannosylation of protein. The enzyme catalyzing the synthesis of N-acetylglucosaminylpyrophosphoryl-polyprenol showed the highest specificity and only polyprenyl phosphates resembling natural yeast dolichyl phosphate in nearly all respects were effective substrates. Mono-N-acetylglucosaminyl-lipids were glycosyl donors to protein only after conversion to more polar lipids containing addnl. residues of N-acetylglucosamine and mannose. In all reactions tested, changes in the chain length of the polyprenyl moiety had little or no effect on activity.
CC 6-1 (General Biochemistry)

ST polyprenyl specificity glycosyl transfer yeast; glycolipid formation polyprenyl specificity yeast; glycoprotein formation polyprenyl specificity yeast

IT Glycolipids
Glycoproteins
Mannolipids
Mannoproteins
RL: BSU (Biological study, unclassified); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative)
(formation of, by yeast **membrane**, polyprenol derivative specificity in)

IT Saccharomyces cerevisiae
(glycosyl transfer by, polyprenol derivative specificity in)

IT 66757-26-4P **66803-24-5P**
RL: **PREP (Preparation)**
(formation of and glycoprotein formation from, by yeast **membrane**)

IT 528-04-1 3123-67-9
RL: BIOL (Biological study)
(glycolipid formation from, by yeast **membranes**, polyprenyl derivs. specificity in)

IT 50675-83-7 63296-35-5 63301-33-7 63357-37-9 63368-99-0 66757-18-4 66757-19-5
RL: BIOL (Biological study)
(glycosyl transfer to, by yeast **membranes**)

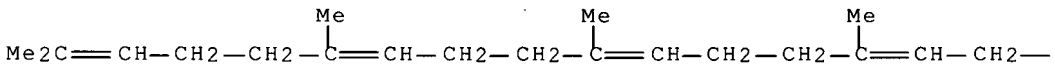
IT 66757-20-8 66757-21-9 66757-22-0 66757-23-1 66757-24-2 66757-25-3 66792-12-9
RL: BIOL (Biological study)
(mannoprotein formation from, by yeast **membranes**)

IT **66803-24-5P**
RL: **PREP (Preparation)**
(formation of and glycoprotein formation from, by yeast **membrane**)

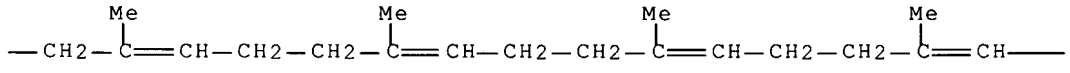
RN 66803-24-5 HCAPLUS

CN α-D-Glucopyranose, 2-(acetylamino)-2-deoxy-, 1-[P'-(3,7,11,15,19,23,27,31,35,39,43,47,51,55,59,63-hexadecamethyl-6,10,14,18,22,26,30,34,38,42,46,50,54,58,62-tetrahexacontapentadecaenyl) dihydrogen diphosphate] (9CI) (CA INDEX NAME)

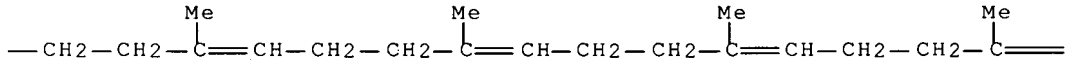
PAGE 1-A



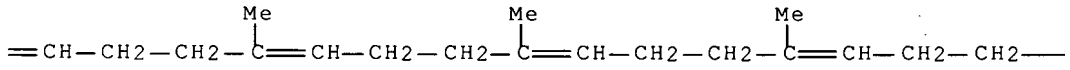
PAGE 1-B



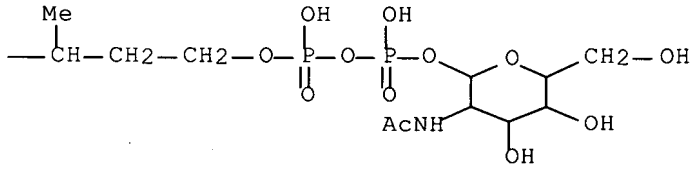
PAGE 1-C



PAGE 1-D



PAGE 1-E



L35 ANSWER 30 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1975:527644 HCAPLUS Full-text
DN 83:127644
TI Formation of lipid-bound oligosaccharides in yeast
AU Lehle, Ludwig; Tanner, Widmar
CS Fachbereich Biol., Univ. Regensburg, Regensburg, Fed. Rep. Ger.
SO Biochimica et Biophysica Acta, General Subjects (1975), 399(2), 364-74
CODEN: BBGSB3; ISSN: 0304-4165
DT Journal
LA English
AB Incubation of a **membrane** fraction from Saccharomyces cerevisiae with UDP-N-acetylglucosamine-14C catalyzed the transfer of N-acetylglucosamine to an endogenous lipid fraction as well as a MeOH-insol. polymer. The glycolipid separated into 3 compds. by thin-layer chromatog. The biosynthesis of 2 of which were stimulated by the addition of dolichol monophosphate to the incubation mixture The substances were dolichol pyrophosphate derivs.: dolichol pyrophosphate N-acetylglucosamine and dolichol pyrophosphate di-N-acetylchitobiose. The formation of the chitobiose-containing lipid was increased by reincubation of the glycolipid with nonradioactive UDP-N-acetylglucosamine. The same particulate preparation transferred mannose from GDP-mannose to dolichol pyrophosphate di-N-acetylchitobiose, giving rise to a lipid-bound oligosaccharide. The mol. weight of the oligosaccharide moiety was 780, a value consistent with a tetrasaccharide containing 2 mannose subunits attached to di-N-acetylchitobiose. The MeOH-insol. radioactive product obtained in the presence of UDP-N-acetylglucosamine-14C was transformed by pronase treatment to a large extent into dialyzable material. The glycolipids may serve as intermediates in the glycosylation of yeast mannoproteins.
CC 6-1 (General Biochemistry)
ST Saccharomyces **membrane** glycolipid formation; dolichol pyrophosphate formation Saccharomyces
IT Glycolipids
RL: BSU (Biological study, unclassified); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative); **PREP (Preparation)**
(formation of, by Saccharomyces cerevisiae **membranes**)
IT Saccharomyces cerevisiae

(lipid-bound oligosaccharide formation by **membranes** of)

IT Cell **membrane**

(lipid-bound oligosaccharide formation by, of Saccharomyces cerevisiae)

IT **56637-52-6P 56687-93-5P**

RL: BSU (Biological study, unclassified); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative); **PREP (Preparation)**

(formation of, by Saccharomyces cerevisiae **membranes**)

IT 528-04-1

RL: BIOL (Biological study)

(in glycolipid formation by Saccharomyces **membranes**)

IT 3123-67-9

RL: BIOL (Biological study)

(mannose transfer from, to dolichol pyrophosphate diacetylchitobiose, by saccharomyces **membranes**)

IT **56637-52-6P 56687-93-5P**

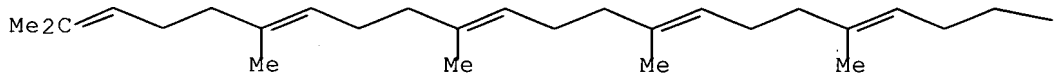
RL: BSU (Biological study, unclassified); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative); **PREP (Preparation)**

(formation of, by Saccharomyces cerevisiae **membranes**)

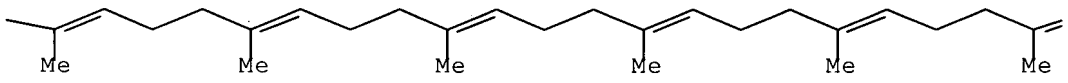
RN 56637-52-6 HCAPLUS

CN α-D-Glucopyranose, 2-(acetylamino)-4-O-[2-(acetylamino)-2-deoxy-β-D-glucopyranosyl]-2-deoxy-, 1-[P-(3,7,11,15,19,23,27,31,35,39,43,47,51,55,59,63,67,71,75,79-eicosamethyl-6,10,14,18,22,26,30,34,38,42,46,50,54,58,62,66,70,74,78-octacosanonadecaenyl) P,P'-dihydrogen diphosphate] (9CI) (CA INDEX NAME)

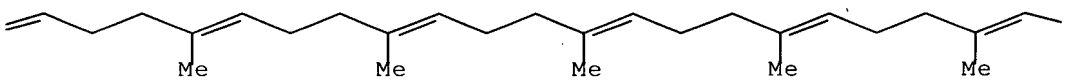
PAGE 1-A



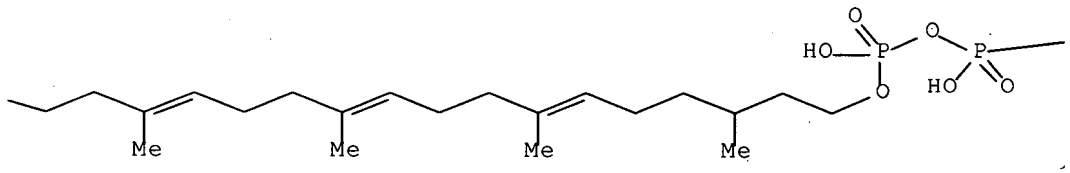
PAGE 1-B



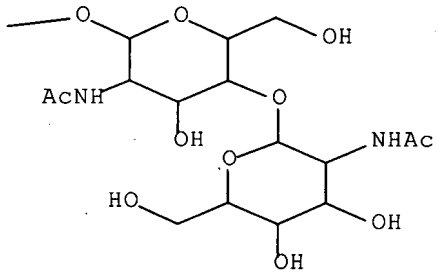
PAGE 1-C



PAGE 1-D



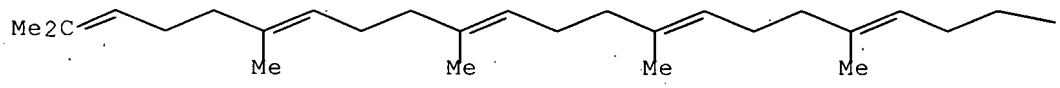
PAGE 1-E



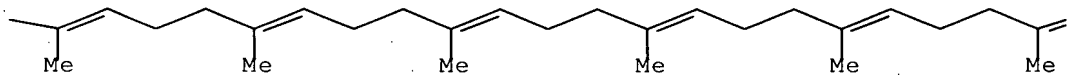
RN 56687-93-5 HCAPLUS

CN α-D-Glucopyranose, 2-(acetylamino)-2-deoxy-, 1-[P'-(3,7,11,15,19,23,27,31,35,39,43,47,51,55,59,63,67,71,75,79-eicosamethyl-6,10,14,18,22,26,30,34,38,42,46,50,54,58,62,66,70,74,78-octacosanonadecaenyl) dihydrogen diphosphate] (9CI) (CA INDEX NAME)

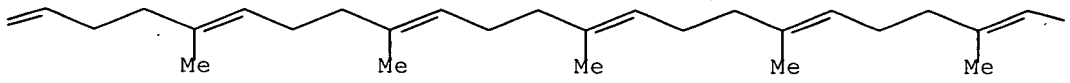
PAGE 1-A



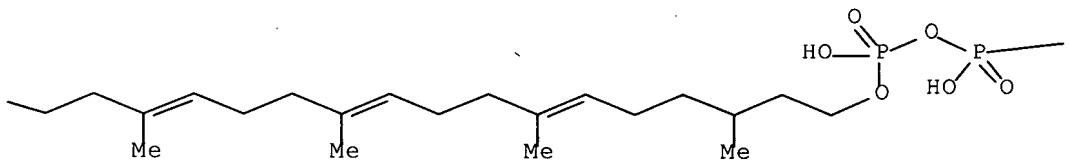
PAGE 1-B



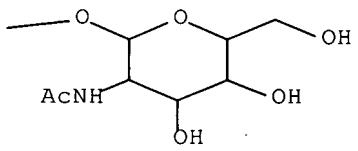
PAGE 1-C



PAGE 1-D



PAGE 1-E

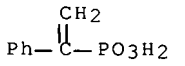


L35 ANSWER 31 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1975:429296 HCAPLUS Full-text
DN 83:29296
TI Phosphonic acid ion exchange **membranes**
AU Kurbanov, A. I.; Alovitdinov, A. B.; Kuchkarov, A. B.
CS USSR
SO Trudy Tashkentskogo Politekhnicheskogo Instituta (1973), 107, 17-19
CODEN: TTPLAA; ISSN: 0372-2333
DT Journal
LA Russian
AB Homogeneous ion-exchange **membranes** were obtained by the phosphorylation of 2,3-dichlorobutadiene-styrene copolymer (I) [54181-06-5] with PCl3 [7719-12-2] in the presence of AlCl3 (1:2:10 I-AlCl3-PCl3 ratio) at 70° for 4 hr. After hydrolysis and oxidation, the material was milled and heat molded to give a **membrane** having elec. volume resistivity (ρ) 408-582 ohm cm, tensile strength (σ) 10-70 kg/cm2, and flexural strength (σb) 25-55 average number of bonds. Heterogeneous **membranes** were obtained by mixing equal parts of polychloroprene (Nairit NT) with α-phenylvinylphosphonic acid-styrene copolymer [25686-91-3], milling for 30-45 min, and molding. The heterogeneous **membrane** had ρ 445-821 ohm cm, σ 30-80 kg/cm2, and σb 140-210 average number bonds. The exchange capacity for both types of **membranes** in 0.1N KOH was in the range 1.16-2.2 mg equiv/g.
CC 37-3 (**Plastics** Fabrication and Uses)
ST phosphonic acid ion exchanger; chlorobutadiene styrene copolymer phosphorylation; neoprene contg ion exchanger; phenylvinylphosphonic acid styrene copolymer

IT Rubber, neoprene, uses and miscellaneous
(blends, with phenylvinylphosphonic acid styrene polymer, for ion exchange **membranes**)
IT Ion exchangers
(**membranes**, phosphonic acid-containing, preparation and properties of)
IT Phosphorylation, synthetic
(of dichlorobutadiene-styrene polymer, by phosphorus trichloride)
IT Electric resistance
(of phosphonic acid-containing ion exchange **membranes**)
IT Benzene, ethenyl-, polymer with 2,3-dichloro-1,3-butadiene, phosphorylated
RL: USES (Uses)
(**membranes**, ion exchangers)
IT **25686-91-3P**
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(ion exchange **membranes** from neoprene rubber-containing, preparation and properties of)
IT 54181-06-5D, 1,3-Butadiene, 2,3-dichloro-, polymer with ethenylbenzene, phosphorylated
RL: USES (Uses)
(**membranes**, ion exchangers)
IT 7719-12-2
RL: USES (Uses)
(phosphorylation by, of dichlorobutadiene-styrene polymer)
IT 9010-98-4
(rubber, neoprene; blends, with phenylvinylphosphonic acid styrene polymer, for ion exchange **membranes**)
IT **25686-91-3P**
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(ion exchange **membranes** from neoprene rubber-containing, preparation and properties of)
RN 25686-91-3 HCAPLUS
CN Phosphonic acid, (1-phenylethenyl)-, polymer with ethenylbenzene (9CI) (CA INDEX NAME)

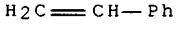
CM 1

CRN 3220-50-6
CMF C8 H9 O3 P



CM 2

CRN 100-42-5
CMF C8 H8



L35 ANSWER 32 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1967:433255 HCAPLUS Full-text
DN 67:33255

TI Application of mathematical methods for finding optimum conditions of graft-copolymerization

AU Novikova, S. P.; Kolesnikov, G. S.; Tevlina, A. S.; Biryukov, V. V.

CS D. I. Mendeleev Mosk. Khim.-Tekhnol. Inst., Moscow, USSR

SO Vysokomolekulyarnye Soedineniya, Seriya A (1967), 9(3), 605-11
CODEN: VYSAAF; ISSN: 0507-5475

DT Journal

LA Russian

AB An example of graft copolymn. of α-phenylvinylphosphonic acid or acrylonitrile on fluorine-containing polyolefin film was used to demonstrate a math. sequential exptl. design method for optimization of the reaction conditions. Exptl. verification of the math. results followed. A high P content ion-exchange **membrane** of a high ion-exchange capacity (2.5-2.8 mg. equivalent/g.) and elec. resistivity .apprx.600 ohmcm. was prepared

CC 36 (**Plastics** Manufacture and Processing)

ST MATH GRAFT COPOLYMN; GRAFT COPOLYMN MATH; COPOLYMN GRAFT MATH; ACRYLONITRILE GRAFT COPOLYMN; VINYLPHOSPHONIC ACID GRAFT COPOLYMN

IT Cation exchangers, properties
(capacity of, of (1-phenylvinyl)phosphonic acid graft polymers on fluorine-containing olefin polymer film)

IT **Membranes**
(cation-exchanging, from (1-phenylvinyl)phosphonic acid graft polymers on fluorine-containing olefin polymer film)

IT Olefins, preparation
RL: SPN (Synthetic preparation); PREP (Preparation)
(fluorine-containing, polymer with acrylonitrile or (1-phenylvinyl)phosphonic acid, graft, preparation of, optimization of)

IT Cation exchangers, preparation
(from (1-phenylvinyl)phosphonic acid graft polymers with fluorine-containing olefin polymer films)

IT Polymerization
(graft, optimization of, calcn. of)

IT Electric resistance
(of cation exchanging **membrane** from (1-phenylvinyl)phosphonic acid graft polymers on fluorine-containing olefin polymer film)

IT Optimization
(of polymerization (graft), calcn. of)

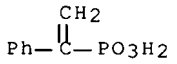
IT **3220-50-6P**
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(polymers with fluorine-containing olefin polymer film, graft, preparation of,
optimization of, and cation-exchanging **membranes** thereby)

IT 25014-41-9P, preparation
RL: PREP (Preparation)
(with fluorine-containing olefin polymer film, graft, optimization of)

IT **3220-50-6P**
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(polymers with fluorine-containing olefin polymer film, graft, preparation of,
optimization of, and cation-exchanging **membranes** thereby)

RN 3220-50-6 HCAPLUS

CN Phosphonic acid, (1-phenylethenyl)- (9CI) (CA INDEX NAME)



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